



Log of Boring BH-03-01 Sheet of 1 1 Project No. East Project Beazer/INDSPEC Properties 2568412 1427021.781 Location Elevation and Datum North 1291.74 NAVD 1988 Petrolia, Pennsylvania 622735.173 Drilling Agency Date Started Date Finished 7/14/04 7/14/04 Langan Engineering & Environmental Drilling Equipment Completion Depth Rock Depth Hand Auger 1.5 ft N/A Size and Type of Bit Disturbed Undisturbed Core Number of Samples 3 1/4" OD, 12" Long, Stainless Steel Casing Diameter (in) Casing Depth (ft) Completion 24 HR. First Water Level (ft.) N/A N/A N/A N/A \mathbf{V} N/A Drop (in) N/A Drilling Foreman Casing Hammer Weight (lbs) N/A N/A N/A Sampler Stainless Steel Hand Auger Inspecting Engineer Drop (in) N/A Weight (lbs) Sampler Hammer N/A Jason Hanna Sample Data MATERIAL SYMBOL PID Readir (ppm) Remarks PID FID Reading Depth Number Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Type Q:DATA42568401/DATA FROM PHILLY/OFFICE DATA/GINT LOGS\INDSPEC BORING LOGS.GPJ ... 11/2/2009 2:59:45 PM ... Report. Log - LANGAN ...Template LANGAN. GDT Scale (ppm) 11/2 11/2 Black organic TOPSOIL, roots and leaf matter (dry) 0 0 *HA 7 Dark brown sandy SILT, trace gravel, some roots (dry) Collected BH-03-01-071404_0-1 at 1 $^{\circ}$ 9 0930. Hand Auger refusal End of Boring @ 1.5 ft 2 encountered at 1.5 feet below ground surface. 3 5 6 8 9 12 13 15 16 17 18 19



Log of Boring BH-03-02 Sheet of 1 1 Project No. East Project Beazer/INDSPEC Properties 2568412 1427022.356 Location Elevation and Datum North 1276.55 NAVD 1988 Petrolia, Pennsylvania 622789.62 Drilling Agency Date Started Date Finished 7/20/04 7/20/04 Langan Engineering & Environmental **Drilling Equipment** Completion Depth Rock Depth Hand Auger 2ft N/A Size and Type of Bit Disturbed Undisturbed Core Number of Samples 3 1/4" Diameter, 12" Long, Stainless Steel 2 Casing Diameter (in) Casing Depth (ft) Completion 24 HR. First Water Level (ft.) N/A N/A N/A N/A \mathbf{I} N/A Drop (in) N/A Drilling Foreman Casing Hammer Weight (lbs) N/A N/A N/A Sampler Stainless Steel Hand Auger Inspecting Engineer Drop (in) N/A Weight (lbs) Sampler Hammer N/A Jason Hanna Sample Data MATERIAL SYMBOL Remarks PID FID Reading Depth Number Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Template LANGAN.GDT Scale (ppm) Dark brown CLAY, some gravel, trace sand (dry) *HA 7 Brown sandy SILT, some gravel, tan micaceous sandstone Collected BH-03-02-072004_1-2 at fragements (dry) *HA 0825. 7 N Hand Auger refusal Q:DATA4/2568401/DATA FROM PHILLY/OFFICE DATA/GINT LOGS\INDSPEC BORING LOGS.GPJ ... 11/2/2009 2:59:53 PM ... Report Log - LANGAN .. End of Boring @ 2 ft encountered at 2 feet below ground surface. 3 5 6 12 13 15 16 18 19



Log of Boring BH-03-03 Sheet of 1 1 Project No. East Project Beazer/INDSPEC Properties 2568412 1427016.566 Location Elevation and Datum North 1265.25 NAVD 1988 622699.912 Petrolia, Pennsylvania Drilling Agency Date Started Date Finished 7/15/04 7/15/04 Langan Engineering & Environmental Drilling Equipment Completion Depth Rock Depth Hand Auger 1 ft N/A Size and Type of Bit Disturbed Undisturbed Core Number of Samples 3 1/4" OD, 12" Long, Stainless Steel Casing Diameter (in) Casing Depth (ft) Completion 24 HR. First Water Level (ft.) N/A N/A N/A N/A \mathbf{V} N/A Drop (in) N/A Drilling Foreman Casing Hammer Weight (lbs) N/A N/A N/A Sampler Stainless Steel Hand Auger Inspecting Engineer Drop (in) N/A Weight (lbs) Sampler Hammer N/A Jason Hanna Sample Data MATERIAL SYMBOL Remarks Depth Number Penetr. resist BL/6in Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Type Q:DATA42568401/DATA FROM PHILLY/OFFICE DATA/GINT LOGS\INDSPEC BORING LOGS.GPJ ... 11/2/2009 2:59:59 PM ... Report. Log - LANGAN ...Template LANGAN. GDT Scale (ppm) Collected Dark brown to black organic TOPSOIL, roots and leaf matter (moist) BH-03-03-071504_0-1 at Brown sandy SILT, trace brown sandstone fragements and mixed 2 1020. gravel (dry) - Hand Auger refusal End of Boring @ 1 ft encountered at 1 foot below 2 ground surface. 3 5 6 8 9 10 12 13 14 15 16 17 18 19



Log of Boring BH-03-04 Sheet of 1 1 Project No. East Project Beazer/INDSPEC Properties 2568412 1426734.814 Location Elevation and Datum North 1269.98 NAVD 1988 622789.146 Petrolia, Pennsylvania Drilling Agency Date Started Date Finished 7/20/04 7/20/04 Langan Engineering & Environmental **Drilling Equipment** Completion Depth Rock Depth Hand Auger 1.5 ft N/A Size and Type of Bit Disturbed Undisturbed Core Number of Samples 3 1/4" Diameter, 12" Long, Stainless Steel 2 Casing Diameter (in) Casing Depth (ft) Completion 24 HR. First Water Level (ft.) N/A N/A N/A N/A \mathbf{V} N/A Drop (in) N/A Drilling Foreman Casing Hammer Weight (lbs) N/A N/A N/A Sampler Stainless Steel Hand Auger Inspecting Engineer Drop (in) N/A Weight (lbs) Sampler Hammer N/A Jason Hanna Sample Data MATERIAL SYMBOL Remarks Depth PID Number Penetr. resist BL/6in Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Type Q:DATA42568401/DATA FROM PHILLY/OFFICE DATA/GINT LOGS\INDSPEC BORING LOGS.GPJ ... 11/2/2009 3:00:01 PM ... Report. Log - LANGAN ...Template LANGAN. GDT Scale Reading (ppm) Dark black organic TOPSOIL, trace sand, roots and leaf matter 7 Collected Light brown sandy SILT, some gravel, trace brown sandstone BH-03-04-072004_0.5-1.5 at $^{\circ}$ 9 fragements (drv) Hand Auger refusal End of Boring @ 1.5 ft 2 encountered at 1.5 feet below ground surface. 3 4 5 6 8 9 10 12 13 14 15 16 17 18 19



Log of Boring BH-03-05 Sheet of 1 1 Project No. East Project Beazer/INDSPEC Properties 2568412 1426712.202 Location Elevation and Datum North 1257.17 NAVD 1988 622597.886 Petrolia, Pennsylvania Drilling Agency Date Started Date Finished 7/20/04 7/20/04 Langan Engineering & Environmental Drilling Equipment Completion Depth Rock Depth Hand Auger 2 ft N/A Size and Type of Bit Disturbed Undisturbed Core Number of Samples 3 1/4" Diameter, 12" Long, Stainless Steel 2 Casing Diameter (in) Casing Depth (ft) Completion 24 HR. First Water Level (ft.) N/A N/A N/A N/A \mathbf{V} N/A Drop (in) N/A Drilling Foreman Casing Hammer Weight (lbs) N/A N/A N/A Sampler Stainless Steel Hand Auger Inspecting Engineer Drop (in) N/A Weight (lbs) Sampler Hammer N/A Jason Hanna Sample Data MATERIAL SYMBOL Remarks Depth PID Number Penetr. resist BL/6in Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Type ANGAN.GDT Scale Reading (ppm) Black organic TOPSOIL, roots and leaf matter (dry) *HA 7 Black and dark gray stratified CLAY, some gravel, (dry) Collected BH-03-05-072004_0.5-1.5 at *HA 0910. 7 N Light brown sandy SILT, some gravel and sandstone fragements Hand Auger terminated at 2 End of Boring @ 2 ft Q:/DATA4/2568401/DATA FROM PHILLY/OFFICE DATA/GINT LOGS/INDSPEC BORING LOGS.GPJ ... 11/2/2009 3:00:04 PM ... Report Log - LANGAN feet below ground surface. 3 4 5 6 8 9 10 12 13 14 15 16 17 18 19



	ENGINEER	RING & ENVIRO	NMENTAL SERVIC	CES	Log	of E	Boring		Е	3H-0	3-06	<u> </u>		Sheet	1	of	1
Project						Pr	oject No								East		
oooti	Bea	zer/INDSPEC	Properties			 			ot		8412				NI = =		5532.0
ocation	D-4	rolio Donne +	vania			=16	evation a	ind D	atum		00 40 \$	IAV/D 40	00		North)E02 E
Orilling Age		rolia, Pennsylv	/ania			Da	ite Starte	ed		120	J9.18 N	IAVD 19		Finished		622	2583.5
59	-	gan Engineeri	ing & Environme	ental			- 3			7	//20/04					7/20/04	
rilling Equ		<u> </u>	3			Co	mpletio	n Dep	oth				ock	Depth			
		nd Auger								1=	3.8 ft	:				N/A	
ize and T	ype of Bit 3 1/	4" OD 12" Lo	ong, Stainless S	teel		Νι	ımber of	Sam	ples	Dist	urbed	4	Un	disturbed		Core	
asing Dia	ımeter (in)				Casing Depth (ft)	\ _w	ater Lev	ر ft ام	١	Firs	t			mpletion		24 HR.	
anina Ha	N/A		Weight (lbs)		N/A	1	illing Fo	` '	•	$ \bar{\Delta}$	-	N/A	Ž		N/A	$ar{ar{ar{\Lambda}}}$	N/A
asing Har	M/A		Weight (188)	N/A	Drop (in) N/A	آ'	illing i o	Cilia		I/A							
ampler		nless Steel Ha			1=	Ins	specting	Engi		4//\							
ampler H	ammer	N/A	Weight (lbs)	N/A	Drop (in) N/A				J	ason	Hanna	a					
Z AL								_			mple D				Re	marks	
MATERIAL SYMBOL		S	ample Descrip	otion			Depth Scale		Type	i.co	Penetr. resist BL/6in	PID Readin	g	_ (Drilli		, Depth of C ing Resista	Casing,
žα							0 -	Nur	F	ag ag	P s H	(ppm)	ĭ	Fluid Lo	oss, Drill	ıng Resista	nce, etc
			roots and leaf r		/) stone fragements		<u> </u>	-	*HA	12			_				_
444	(dry)	I SIILY CLAY, S	ome ime sand a	anu sanos	sone nagements	, -	<u> </u>	1	*					Collec	rtad		
XXI,	Brown silty		decayed wood	matter, tra	ce dark gray clay	/	Ē.	2	¥	12						72004_1	-2 at
	lenses (mo		sand, some sar	ndetono fr	agements (dn/)		2 .	1	*					0940. Collec		_	
	Daik DIOWI	i OLAT, liace	sanu, sunt sal	iusiulie II	agements (ury)		F	m	¥	12						72004_2	-3 at
							_ 3 ·	1		\vdash				0950.			
							<u> </u>	4	¥H.	8							
		End of	Boring @ 3	.8 ft			- 4	7						Hand	Auge	refusal d at 3.8 fe	et he
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Log of Boring BH-03-07 Sheet of 1 1 Project No. East Project 1426395.684 Beazer/INDSPEC Properties 2568412 Location Elevation and Datum North 1175.18 NAVD 1988 622408.069 Petrolia, Pennsylvania Date Started **Drilling Agency** Date Finished 7/13/04 7/13/04 Langan Engineering & Environmental **Drilling Equipment** Completion Depth Rock Depth Hand Auger 5.2 ft N/A Size and Type of Bit Disturbed Undisturbed Core Number of Samples 3 1/4" OD, 12" Long, Stainless Steel 5 Casing Diameter (in) Casing Depth (ft) Completion 24 HR. First Water Level (ft.) N/A N/A N/A N/A \mathbf{V} N/A Drop (in) N/A Drilling Foreman Casing Hammer Weight (lbs) N/A N/A N/A Sampler Stainless Steel Hand Auger Inspecting Engineer Drop (in) N/A Weight (lbs) Sampler Hammer N/A Jason Hanna Sample Data MATERIAL SYMBOL Remarks Depth Sample Description Number Penetr. resist BL/6in (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Type .Template LANGAN.GDT Reading (ppm) Scale Dark black organic TOPSOIL, roots and leaf matter (dry) 7 Dark brown sandy SILT, some gravel (dry) Collected BH-03-07-071304_0.5-1.5 at ťΗA 0920. 7 N 2 Collected Report: Log - LANGAN .. 7 BH-03-07-071304_2-3.5 at Light brown sand SILT, w/orange mottles, some gravel, micaceous 0940. 3 sandstone (dry) 7 7 Ω Light brown sand SILT, w/orange mottles, micaceous sandstone, increased gravel content (dry) Hand Auger refusal Q:DATA4/2568401/DATA FROM PHILLY/OFFICE DATA/GINT LOGS\INDSPEC BORING LOGS.GPJ ... 11/2/2009 3:00:10 PM . End of Boring @ 5.2 ft encountered at 5.2 feet below 6 ground surface. 8 9 10 12 13 14 15 16 17 18 19



BH-03-08 Sheet Log of Boring of 1 1 Project No. East Project Beazer/INDSPEC Properties 1426611.544 2568412 Location Elevation and Datum North 1216.39 NAVD 1988 622386.864 Petrolia, Pennsylvania Drilling Agency Date Started Date Finished 7/20/04 7/20/04 Langan Engineering & Environmental **Drilling Equipment** Completion Depth Rock Depth Hand Auger 2 ft N/A Size and Type of Bit Disturbed Undisturbed Core Number of Samples 3 1/4" OD, 12" Long, Stainless Steel 2 Casing Diameter (in) Casing Depth (ft) Completion 24 HR. First Water Level (ft.) N/A N/A N/A N/A \mathbf{V} N/A Drop (in) N/A Drilling Foreman Casing Hammer Weight (lbs) N/A N/A N/A Sampler Stainless Steel Hand Auger Inspecting Engineer Drop (in) N/A Weight (lbs) Sampler Hammer N/A Jason Hanna Sample Data MATERIAL SYMBOL Remarks Depth Number Penetr. resist BL/6in Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Type ANGAN.GDT Reading (ppm) Scale Light brown sandy SILT, trace mica (moist) *HA 7 Light brown CLAY, some wood and root matter, trace sand, (very Collected BH-03-08-072004_0.5-1.5 at moist) *HA 1010. 7 N Light brown silty SAND, trace micaceous sandstone fragments (dry) Hand Auger refusal End of Boring @ 2 ft Q:/DATA4/2568401/DATA FROM PHILLY/OFFICE DATA/GINT LOGS/INDSPEC BORING LOGS.GPJ ... 11/2/2009 3:00:12 PM ... Report: Log - LANGAN encountered at 2 feet below ground surface. 3 4 5 6 8 9 10 12 13 14 15 16 17 18 19

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Log of Boring BH-03-09 Sheet of 1 1 Project No. East Project 1426416.333 Beazer/INDSPEC Properties 2568412 Location Elevation and Datum North 1185.05 NAVD 1988 622199.557 Petrolia, Pennsylvania Drilling Agency Date Started Date Finished 7/13/04 7/13/04 Langan Engineering & Environmental Drilling Equipment Completion Depth Rock Depth 7.8 ft Hand Auger N/A Size and Type of Bit Disturbed Undisturbed Core Number of Samples 3 1/4" Diameter, 12" Long, Stainless Steel 8 Casing Diameter (in) Casing Depth (ft) Completion 24 HR. First Water Level (ft.) N/A N/A 6.5 N/A \mathbf{V} N/A Drop (in) N/A Drilling Foreman Casing Hammer Weight (lbs) N/A N/A N/A Sampler Stainless Steel Hand Auger Inspecting Engineer Drop (in) N/A Weight (lbs) Sampler Hammer N/A Jason Hanna Sample Data MATERIAL SYMBOL Remarks Depth Number Penetr. resist BL/6in Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Type emplate LANGAN.GD Reading (ppm) Scale Dark brown sandy SILT, some gravel, trace leaf and root matter 7 (moist) Collected BH-03-09-071304_0.5-1.5 at ťΗA 1015. 7 2 Light brown to gray CLAY, trace gravel, w/orange mottles (moist) 7 3 7 Light gray CLAY, trace orange silt, some gravel (dry) Collected ۲HA 7 Ω BH-03-09-071304_4-6 at 1030. 5 ťΗA 7 9 6 Saturated at 6.5 feet below ∇ 7 ground surface. Light gray CLAY, trace orange silt, some gravel (wet) ထ ω Hand Auger refusal 8 End of Boring @ 7.8 ft Q:\DATA4\2568401\DATA FROM PHILLY\OFFICE DATA\GINT LOGS\\INDSPEC BORING LOGS\.GPJ. encountered at 7.8 feet below ground surface. 9 10 12 13 14 15 16 17 18 19



Log of Boring BH-03-10 Sheet of 1 1 Project No. East Project Beazer/INDSPEC Properties 2568412 1426746.205 Location Elevation and Datum North 1237.28 NAVD 1988 622210.804 Petrolia, Pennsylvania Drilling Agency Date Started Date Finished 7/20/04 7/20/04 Langan Engineering & Environmental Drilling Equipment Completion Depth Rock Depth Hand Auger 1 ft N/A Size and Type of Bit Disturbed Undisturbed Core Number of Samples 3 1/4" OD, 12" Long, Stainless Steel Casing Diameter (in) Casing Depth (ft) Completion 24 HR. First Water Level (ft.) N/A N/A N/A N/A \mathbf{I} N/A Drop (in) N/A Drilling Foreman Casing Hammer Weight (lbs) N/A N/A N/A Sampler Stainless Steel Hand Auger Inspecting Engineer Drop (in) N/A Weight (lbs) Sampler Hammer N/A Jason Hanna Sample Data MATERIAL SYMBOL Remarks Depth Number Penetr. resist BL/6in Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Type Q:DATA42568401/DATA FROM PHILLY/OFFICE DATA/GINT LOGS\INDSPEC BORING LOGS.GPJ ... 11/2/2009 3:00:17 PM ... Report. Log - LANGAN ...Template LANGAN. GDT Reading (ppm) Scale Collected Dark gray silty CLAY, trace gravel (moist) BH-03-10-072004_0-1 at 7 Brown sandy SILT to silty SAND, with red, tan, and black sandstone 1015 fragments (dry) - Hand Auger refusal End of Boring @ 1 ft encountered at 1 foot below 2 ground surface. 3 5 6 8 9 10 12 13 14 15 16 17 18 19



	ENGINEERING & ENVIRON	IMENTAL SERVICES	Log	of E	Boring	_		В	H-C	<u> </u>			Sheet	1	of	1
Project				Pr	oject N	0.								East		
Location	Beazer/INDSPEC	Properties		FI	evation	and l	Da			8412				North		25809.228
Location	Petrolia, Pennsylv	ania			cvation	ana	Du	itaiii		2 6 NA	AVD 198	8		INOIL		1289.602
Drilling A		arna		Da	ate Star	ted				2.0147			Finished	-		1200.002
	Bassett Environme	ental							7	/19/04					7/19/04	
Drilling E	quipment			Co	ompletio	on De	ept	:h		44.6		ock	Depth		44.6	
Size and	Pickup Truck Mou	nted Geoprobe		\vdash					Dist	14 ft urbed		Un	disturbed		11 ft Core	
	2" OD, 48" Long, \$	Stainless Steel		Νι	ımber o	of Sar	mp	les			4					
Casing L	Diameter (in) N/A		Casing Depth (ft) N/A	W	ater Le	vel (f	t.)		Firs		N/A		mpletion	N/A	24 HR.	N/A
Casing F		Weight (lbs) N/A	Drop (in) N/A	Dr	illing Fo	orem	an			•					<u> </u>	
Sampler		Disposable Acetate Line	oro	L		_	_		ave							
Sampler	Hammar	Weight (lbs)	Drop (in) N/A	lins	specting	g Eng	gine			- C-b.						
· ·	Direct Push	N/A	N/A	L				C		a Schu mple D						
MATERIAL SYMBOL	Sa	ample Description			Dept	h j	Der	96					, (Dri		marks	Casing
MAT SYI		imple Decomption			Scale		Number	Type	Reo E	Penetr. resist BL/6in	Readin (ppm)		Fluid	Loss, Dril	ing Resist	Casing, ance, etc.)
\$ 14. 14.	Black organic TOPSOIL,	roots and leaf matter (dr	y)		F 0	\pm			1		0					
	Brown silty CLAY, with fin subangular gravel and sa				_ 1	=					0					
	casarigalar graver and ca	nacione nagomente (me	sioty		Ė '	\pm		_ \			0			ected 03-11-0	71904_	1-2 at
	Gray fine to course gravel	Illy CIL T (de t)			_ 2	4	-	PUSF	84		0.8		0920	Э.	_	
	Gray line to course grave	ily SILT (dry)			Ē	=		Image: Control of the con	1		1.1			ected 03-11-0	71904_2	2-3 at
					_ 3				1		0.4		1000		_	
					Ē	=					0.5					
					- 4	+					0					
	Reddish brown clayey SIL	T, with orange mottles,	trace coarse sand		Ē _	=			1		0					
	and gravel (dry) Brown fractured SANDST	ONE (dn/)			5	\exists			1		0					
			un data in a		<u>-</u> 6	Ė,	7	PUSH	48		0.7					
	Brown clayey SILT, trace \[\trace \] fragements (dry)	line to coarse sands, sa	inasione	/	ŧ	₫`] 4		0					
	Dark brown silty SAND, s	ome sandstone fragmer	nts w/iron staining		- 7	=					0					
	(dry)				F	=			1		0					
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5	Light brown SANDSTONE	E. fine to medium graine	ed, trace orange		12	+					0					
	fine sands, weak hardnes	s & strength, deep weat	thering with iron		Ė	=		Ξ			0					
	staining, highly fractured ((dry)			_ 13	7	4	PUSI	24		0					
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	End of	Boring @ 14 ft			- 14 -	=									efusal er elow gro	ncountered
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	ENGINEERING & ENV	VIRONMENTAL SERVIC	CES	Log	of E	3oring		В	H-C	3-12			Sheet	1	of	1
Project					Pr	oject No.								East		
Location	Beazer/INDSF	PEC Properties				ovetion o	nd De		256	8412				North		828.634
Location	Dotrolia Donn	and vania				evation a	nu Da	atum	117	70 1 NI/	\\/D 100	00		Norti		468.101
Drilling Agency	Petrolia, Penr	isyivariia			Da	ate Starte	d		117	O. 1 INA	198 DVA آ		Finished	-	021	400.101
	Bassett Enviro	onmental							7	/19/04					7/19/04	
Drilling Equipm	nent				Co	ompletion	Dep	th			F	Rock	Depth			
Size and Type	Pickup Truck	Mounted Geoprobe	!						Diet	8 ft urbed		111	ndisturbed		2 ft Core	
Size and Type		ong, Stainless Steel			Νι	umber of	Samp	oles	Dist	uibeu	2		naistarbea		Core	
Casing Diamet	er (in) N/A		(Casing Depth (ft) N/A	w	ater Leve	el (ft.)		Firs	t	N/A		ompletion	N/A	24 HR.	N/A
Casing Hamme	or	Weight (lbs)		Drop (in) N/A	Dr	illing For	emar	1	<u> </u>	-	IN/A	١-	<u>¥</u> '	N/A	<u> </u>	IN/A
Sampler	N/A		N/A	IN/A	1				ave							
Sampler Hamn		ong disposable acet Weight (lbs)		Drop (in)	Ins	specting l	Engin									
	ner Direct P	ush Traight (123)	N/A	N/A		1	1	С		a Schumple D			1			
BOL		Camania Dagania	-4:			Depth	ē	0	1		PID		_		marks	
MATERIAL SYMBOL		Sample Descrip	υιιοΠ			Scale	Number	Type	Reco (in)	Penetr. resist BL/6in	Readi (ppm	ng	(Drill Fluid L	ing Fluic oss, Dril	I, Depth of C ling Resista	casing, nce, etc.)
	rk black organic To	OPSOIL, roots and	leaf matte	er (moist)		- 0 -	+		ξ_	- -	0	,				
Lic	ht reddish brown f	ine to medium coars			Э	Ē. :	}		1		0					
1 21 1	ndstone fragement			datana fragamanta	_	<u> </u>			1		0		Colle		71004 1	2 04
Bri (dr		edium to coarse gra	anieu sano	astone magements	•	2 -	1_	USH	48		0		1212		71904_1	-∠ dl
Bro	own to gray SAND	STONE, medium to	course g	rained, trace fine		ŧ	j .	B.	14		0					
	nds, weak hardnes aining, highly fractu	ss & strength, deep	weatherin	g with iron		- 3 -	-				0 2.5		Colle	ctod		
310	aning, riigiliy iractu	iled (diy)					}		1		0.4		BH-0	3-12-0	71904_3	-4 at
Lic	nht grav SANDSTO	NE, fine to medium	grained	weak hardness &	-	- 4	1		-		2.2		1237			
str	ength, deep weath	ering with iron stain	ing, highly	y fractured (dry)		-					0					
• • • • • • • • • • • • • • • • • • • •						- 5 -	†		1		0					
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	ENG	GINEERING & ENVIROI	NMENTAL SERVIC	ES	Log	of E	Boring		E	3H-(03-13			Sheet	1	of	1
Project						Pr	oject No								East		
Lasstian		Beazer/INDSPEC	Properties								8412				Nad		25880.177
Location		Petrolia, Pennsylv	vanja			E	evation a	ina D	alum		24 21 N	NAVD 1	വള	,	Nort		21740.978
Drilling A	gency	i etiolia, i etiilisyiv	dilla			Da	ate Starte	ed		110	J 4 .211			e Finished		02	21740.370
		Bassett Environm	iental							7	7/19/04					7/19/04	
Drilling E	quipment					Co	mpletion	n Dep	oth				Roc	k Depth			
Size and	Type of E	Pickup Truck Mou	ınted Geoprobe							Dist	16 ft turbed		π	Jndisturbed		8.2 ft Core	
		2" OD, 48" Long,	Stainless Steel			Νι	ımber of	Sam	ples			4					
Casing D)iameter (in) N/A		C	asing Depth (ft) N/A	w	ater Lev	el (ft.))	Firs	st 7	3.5		Completion	N/A	24 HR.	N/A
Casing H	lammer	N/A	Weight (lbs)	N/A	Drop (in) N/A	Dr	illing Fo	rema	n	1 =	_	0.0				1 -	
Sampler		1.5" ID, 48" long	disposable acets			_		F		Greg	Landis						
Sampler	Hammer	Direct Push	Weight (lbs)	N/A	Drop (in) N/A	lins	specting	Engli		`rictir	na Schv	NOT7					
		Direct Pusit		IN/A	IN/A	<u> </u>					ample D						
MATERIAL SYMBOL		Sa	ample Descrip	tion			Depth Scale		be). Sign	etr. sist 6in	PII Read		(Dr		emarks	f Casing.
≱I ∣			<u> </u>				— 0 -	Nun	Ţ	Rec	Penetr. resist BL/6in	(ppr		Fluid	Loss, Dri	lling Resis	f Casing, tance, etc.)
\$ \\ \frac{\sqrt{1}\lambda}{\sqrt{1}\lambda} \\ \frac{\sqrt{1}\lambd	Dark l	black organic TOPS	OIL, roots and le	eaf matte	r (moist)		F 0 -	=				0					
	Brown	n fine to medium gra ments (moist)	ained silty SAND), trace sa	ndstone		Ē 1 -	Ξ.				0		Coll	ected		
	_	n to gray silty CLAY	highly mottled ((moist)		_	Ę	=	_			0		BH-	03-13-0	71904_	1-2 at
		nish orange silty CL	• •	. ,	ments, some fine		_ 2 -	₫-	PUS	42		0		104	9.		
		ed sand (moist)	,	Ü	,		-	=	"			0					
	_	brown to gray silty 0				∇	- 3 - -	1				0					
		brown to gray clayed, iron staining (we		ndstone fr	agements, highly	_	- 4	1				0			ırated a ınd sur	it 3.5 fee face	t below
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	Brown	n clayey SILT, with v	weathered sands	stone frag	ements (dry)		Ė ''	=				0					
	Dark I	brown to reddish bro	own SANDSTON	VF fine to	coarse grained		12 -	 	+	•		0					
	trace	clayey silt lenses, w	eak hardness &	strength,	deep weathering		-	=				0					
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MM		brown to reddish bro ents (dry)	JWII clayey SIL I	, trace sa	nasione		F	7				0					
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BH-03-14 Sheet Log of Boring of 1 1 Project No. East Project Beazer/INDSPEC Properties 2568412 1426877.01 Location Elevation and Datum North Petrolia, Pennsylvania 1289.96 NAVD 1988 621522.79 Date Started **Drilling Agency** Date Finished 7/20/04 7/20/04 **Bassett Environmental Drilling Equipment** Completion Depth Rock Depth Pickup Truck Mounted Geoprobe 8 ft 2.7 ft Size and Type of Bit Disturbed Undisturbed Core Number of Samples 2" OD, 48" Long, Stainless Steel Casing Diameter (in) Casing Depth (ft) Completion 24 HR. First Water Level (ft.) N/A N/A N/A \mathbf{V} N/A N/A Drop (in) N/A Drilling Foreman Casing Hammer Weight (lbs) N/A N/A Dave Sampler 1.5" ID, 48" long disposable acetate liners Inspecting Engineer Drop (in) N/A Weight (lbs) Sampler Hammer Direct Push Cristina Schwarz Sample Data MATERIAL SYMBOL Remarks Depth Number Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Template LANGAN.GD Scale Reading (ppm) 11/2 11/2 Dark black organic TOPSOIL, roots and leaf matter (moist) 32.4 Coal fragements 7.6 Collected BH-03-14-072004_0-1 at Dark brown SILT, some fine grained weathered sandstone 5 1340. fragements (dry) 5.2 48 2 5.2 Collected 0 Light brown SANDSTONE, fine to coarse grained, trace clayey silt BH-03-14-072004_2.5-3.5 at 3 0 lenses, weak hardness & strength, deep weathering (dry) 0 Brown silty SAND (dry) 1.3 Light brown to reddish brown SANDSTONE, fine grained, weak 7.1 5 hardness & strength, deep weathering (dry) 62 3.3 PUSH 48 6 1.9 3 3 2.2 Geoprope refusal encountered Q:DATA4/2568401/DATA FROM PHILLY/OFFICE DATA/GINT LOGS\INDSPEC BORING LOGS.GPJ End of Boring @ 8 ft at 8 feet below ground surface. 9 12 13 15 16 18 19



Log of Boring BH-03-15 Sheet of 1 1 Project No. East Beazer/INDSPEC Properties 2568412 1426713.5 Location Elevation and Datum North 1260.74 NAVD 1988 621655.607 Petrolia, Pennsylvania Date Started **Drilling Agency** Date Finished 7/22/04 7/22/04 Langan Engineering & Environmental **Drilling Equipment** Completion Depth Rock Depth Hand Auger 6.4 ft 6.4 ft Size and Type of Bit Disturbed Undisturbed Core Number of Samples 3 1/4" OD, 6" Long, Stainless Steel 6 Casing Diameter (in) Casing Depth (ft) Completion 24 HR. First Water Level (ft.) N/A N/A N/A N/A $\mathbf{\Lambda}$ N/A Drop (in) N/A Drilling Foreman Casing Hammer Weight (lbs) N/A N/A N/A Sampler Stainless Steel Hand Auger Inspecting Engineer Drop (in) N/A Weight (lbs) Sampler Hammer N/A Dennis Webster Sample Data MATERIAL SYMBOL Remarks Depth Number Penetr. resist BL/6in Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Type ANGAN.GDT Scale (ppm) 11/2 11/2 Black organic TOPSOIL, roots and leaf matter (moist) 7 0 Light brownish orange silty CLAY, highly mottled, trace roots and leaf matter (moist) 0 Collected 7 BH-03-15-072204_1-2 at 0 1430. Dark brown silty CLAY, trace fine sand, some subangular gravel 0 7 0 3 0 7 0 Collected 0 7 Ω BH-03-15-072204_4-5 at 0 1450. 5 0 7 Q:DATA4/2568401/DATA FROM PHILLY/OFFICE DATA/GINT LOGS\INDSPEC BORING LOGS.GPJ ... 11/2/2009 3:00:40 PM ဖ 0 6 0 Dark brown sandy SILT, trace subangular gravel, some brown sandstone fragements (and oring @ 6.4 ft Hand Auger refusal encountered at 6.4 feet below ground surface. 8 9 12 13 15 16 17 18 19



BH-03-16 Sheet Log of Boring of 1 1 Project No. East Project 1425994.95 Beazer/INDSPEC Properties 2568412 Location Elevation and Datum North Petrolia, Pennsylvania 1167.04 NAVD 1988 619678.409 Drilling Agency Date Started Date Finished 7/15/04 **Bassett Environmental** 7/15/04 **Drilling Equipment** Completion Depth Rock Depth **Dolley Mounted Geoprope** 10.5 ft 5.2 ft Size and Type of Bit Disturbed Undisturbed Core Number of Samples 2" OD, 48" Long, Stainless Steel 3 Casing Diameter (in) Casing Depth (ft) Completion 24 HR. First Water Level (ft.) 5.5 N/A \mathbf{V} N/A N/A N/A Drop (in) N/A Casing Hammer Weight (lbs) Drilling Foreman N/A N/A **Greg Landis** Sampler 1.5" ID, 48" long disposable acetate liners Inspecting Engineer Drop (in) N/A Weight (lbs) Sampler Hammer Direct Push Cristina Schwarz Sample Data Remarks MATERIAL Depth PID Number Penetr. resist BL/6in Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Type IGAN.GDI Scale Reading (ppm) 150 Subangular GRAVEL (dry) Gray silty SAND, trace fine brown sand, some reddish brown 210 Collected BH-03-16-071504_0.5-1.5 at sandstone fragements (dry) 38 1135. Black fine SAND, subangular gravel, brick fragments (wet) 18.3 2 Black SANDSTONE, with silty sand, trace subangular gravel (wet) 601 0 3 0 0 Black fine grained SAND, some subangular gravel (wet) 0 0 5 Black SANDSTONE, with silty sand (wet) 0 Black to brown SANDSTONE, fine to coarse grained, weak 0 Saturated at 5.5 feet below hardness & strength, deep weathering (wet) ground surface. Black to gray 6 water with a sheen. PID got wet, not working 7 properly. 8 Collected Black to brown SANDSTONE, fine to coarse grained, trace silty clay BH-03-16-071504_8-9 at lenses, weak hardness & strength, deep weathering (moist) 1245. 9 Q:\DATA4\2568401\DATA FROM PHILLY\OFFICE DATA\GINT LOGS\\NDSPEC BORING 10 Geoprope refusal encountered End of Boring @ 10.5 ft at 10.5 feet below ground 11 surface. 12 13 14 15 16 17 18 19



Log of Boring BH-03-17 Sheet of 1 1 Project No. East Beazer/INDSPEC Properties 1425996.653 2568412 Location Elevation and Datum North 1167.03 NAVD 1988 619688.096 Petrolia, Pennsylvania Drilling Agency Date Started Date Finished 7/15/04 **Bassett Environmental** 7/15/04 **Drilling Equipment** Completion Depth Rock Depth Pickup Truck Mounted Geoprobe 11 ft 11 ft Size and Type of Bit Disturbed Undisturbed Core Number of Samples 2" OD, 48" Long, Stainless Steel 3 Casing Diameter (in) Casing Depth (ft) Completion 24 HR. First Water Level (ft.) N/A N/A 7.8 N/A $\mathbf{\Lambda}$ N/A Drop (in) N/A Drilling Foreman Casing Hammer Weight (lbs) N/A N/A **Greg Landis** Sampler 1.5" ID, 48" long disposable acetate liners Inspecting Engineer Drop (in) N/A Weight (lbs) Sampler Hammer Direct Push Cristina Schwarz Sample Data MATERIAL SYMBOL Remarks Depth Number Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) IGAN.GDI Reading (ppm) Scale PID got wet, not working ASPHALT properly. Gray subangular GRAVEL (dry) Black silty SAND, some sandstone and brick fragements (moist) Collected BH-03-17-071504_1-2 at 1302. 24 2 Black silty SAND, some subangular gravel (moist) 3 Strong odor. 0 0 5 0 55 48 25.5 Black medium to coarse grained SAND (wet) 68.8 0 0 Black medium to coarse grained silty SAND, some sandstone 8 0 fragements (dry) Q:DATA4\2568401\DATA FROM PHILLY\OFFICE DATA\GINT LOGS\INDSPEC BORING LOGS.GPJ 75.3 9 90.4 Collected PUSH 30 BH-03-17-071504_9-10 at 90.2 1419. 10 78 18.2 Geoprope refusal encountered End of Boring @ 11 ft at 11 feet below ground surface. 12 13 15 16 17 18 19



BH-03-18 Sheet Log of Boring of 1 1 Project No. East Beazer/INDSPEC Properties 2568412 1426191.11 Location Elevation and Datum North Petrolia, Pennsylvania 1221.77 NAVD 1988 619876.13 Drilling Agency Date Started Date Finished 7/19/04 **Bassett Environmental** 7/19/04 **Drilling Equipment** Completion Depth Rock Depth Pickup Truck Mounted Geoprobe 15.5 ft 13 ft Size and Type of Bit Disturbed Undisturbed Core Number of Samples 2" OD, 48" Long, Stainless Steel Casing Diameter (in) Casing Depth (ft) Completion 24 HR. First Water Level (ft.) N/A \mathbf{V} N/A N/A N/A 11.5 Drop (in) N/A Drilling Foreman Casing Hammer Weight (lbs) N/A N/A Dave Sampler 1.5" ID, 48" long disposable acetate liners Inspecting Engineer Drop (in) N/A Weight (lbs) Sampler Hammer Direct Push Cristina Schwarz Sample Data MATERIAL SYMBOL Remarks Depth Number Penetr. resist BL/6in Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Type -ANGAN.GD Scale (ppm) Gray subangular GRAVEL (dry) 0 Light brown silty SAND, some sandstone fragements, iron staining, 0 Collected highly mottled (dry) BH-03-18-071904 1-2 at 0 1437. 48 2 0 0 3 0 0 Brown SANDSTONE, fine to medium grained, weak hardness & n strength, deep weathering (moist) Light brown medium to coarse grained silty SAND, some sandstone 5 0 fragements (moist) PUSH 48 6 Brown SANDSTONE, fine to medium grained, weak hardness & strength, deep weathering (moist) Light brown medium to coarse grained silty SAND, some sandstone 0 fragements (moist) 0 8 0 Light brown SANDSTONE, fine grained, iron staining, weak hardness & strength, deep weathering (moist) 9 0 HSI 3 Reddish brown silty SAND, some sandstone fragements (moist) 0 0 ∇ Saturated at 11.5 feet below 0 12 ground surface. 0 0 Light brown to reddish brown SANDSTONE, fine to coarse grained, 13 n Collected iron staining, weak hardness & strength, deep weathering (dry) BH-03-18-071904_13-14 at 0 30 1505. 0 Q:\DATA4\2568401\DATA FROM PHILLY\OFFICE 0 15 0 Geoprobe terminated at 15.5 0 End of Boring @ 15.5 ft 16 feet below ground surface. 17 18 19



BH-03-19 Sheet Log of Boring of 1 1 Project No. East 1426390.77 Beazer/INDSPEC Properties 2568412 North Location Elevation and Datum Petrolia, Pennsylvania 1186.53 NAVD 1988 620799.38 Drilling Agency Date Started Date Finished 7/19/04 7/19/04 **Bassett Environmental Drilling Equipment** Completion Depth Rock Depth Pickup Truck Mounted Geoprobe 15 ft N/A Size and Type of Bit Disturbed Undisturbed Core Number of Samples 2" OD, 48" Long, Stainless Steel Casing Diameter (in) Casing Depth (ft) Completion 24 HR. First Water Level (ft.) N/A \mathbf{V} N/A N/A N/A 14.5 Drop (in) N/A Drilling Foreman Casing Hammer Weight (lbs) N/A N/A Dave Sampler 1.5" ID, 48" long disposable acetate liners Inspecting Engineer Drop (in) N/A Weight (lbs) Sampler Hammer Direct Push Jason Hanna Sample Data MATERIAL SYMBOL Remarks Depth PID Number Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) LANGAN.GD Scale (ppm) Gray subangular GRAVEL, some black silty sand (dry) 0 Collected BH-03-19-071904_0.5-1.5 at 0 Tan sandy SILT, with tan sandstone fragements (dry) 1630. 0 48 2 0 0 3 0 Light gray CLAY, with orange mottles, trace sand and coal fragments, some tan micaceous sandstone fragements (dry) 0 n 5 Light gray SILT, with trace sandstone fragements and subangular 0 PUSH Dark gray CLAY, with subangular gravel, coal fragements (dry) 48 6 0 Dark brown sandy SILT, with subangular gravel, coal fragements (moist) 0 8 9 Black soft COAL HS! 84 3 Dark brown silty CLAY, with subangular gravel, some sandstone fragements (dry) 0 12 Dark gray CLAY, with coal fragements (dry) 0 0 Tan sandy SILT, trace coal and sandstone fragements (dry) 13 n PUSH 30 4 Dark gray to black CLAY, with coal, wood, and sandstone 0 Collected BH-03-19-071904 13.5-14.5 fragements (wet) 0 Q:\DATA4\2568401\DATA FROM PHILLY\OFFICE at 1700. 0 Saturated at 14.5 feet below ground surface End of Boring @ 15 ft Geoprope refusal encountered at 15 feet below ground 16 surface. 17 18 19



BH-03-20 Sheet Log of Boring of 1 1 Project No. East Beazer/INDSPEC Properties 2568412 1426628.63 Location Elevation and Datum North Petrolia, Pennsylvania 1231.45 NAVD 1988 621823.83 Date Started **Drilling Agency** Date Finished 7/20/04 7/20/04 **Bassett Environmental Drilling Equipment** Completion Depth Rock Depth Pickup Truck Mounted Geoprobe 15 ft N/A Size and Type of Bit Disturbed Undisturbed Core Number of Samples 2" OD, 48" Long, Stainless Steel Casing Diameter (in) Casing Depth (ft) Completion 24 HR. First Water Level (ft.) N/A 15 N/A \mathbf{V} N/A N/A Drop (in) N/A Drilling Foreman Casing Hammer Weight (lbs) N/A N/A Dave Sampler 1.5" ID, 48" long disposable acetate liners Inspecting Engineer Drop (in) N/A Weight (lbs) Sampler Hammer Direct Push Cristina Schwarz Sample Data MATERIAL SYMBOL Remarks Depth Number Penetr. resist BL/6in Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Scale (ppm) Light gray silty CLAY, some roots (moist) 4.3 3.5 4.5 Collected Dark reddish brown medium to coarse grained SAND, mixed gravel BH-03-20-072004_1-2 at 42 1110. 2 Black COAL, some orange to brown sandstone fragements (dry) 4 Dark gray CLAY, some silt, trace weathered sandstone fragements 3 67 Collected BH-03-20-072004_3-4 at 1127. Black clayey SAND (dry) 40.9 Light brown CLAY, some sandstone fragments (moist) 3.5 5 27 1.7 PUSH 36 6 1.6 2 Light brown CLAY, some mixed gravel, trace fine sand lenses 1.8 1.6 8 1.1 0 9 1.1 0.7 HSI 36 3 1.3 1.1 8.0 0 12 0 0 13 Gray medium to coarse grained SAND (moist) 0 PUSH 36 Dark gray to black CLAY, trace fine sands, some mixed gravel 0 (moist) 14 0 Q:\DATA4\2568401\DATA FROM PHILLY\OFFICE 0 Gray medium to coarse grained SAND, some clay (wet) Geoprope refusal encountered at 15 feet below ground surface. 16 17 18 19



	ENGINEERING & ENV	RONMENTAL SERV	ICES	Log	of E	Boring] _		В	H-C	3-21			Sheet	1		of	1
Project					Pr	oject N	0.								East			
Location	Beazer/INDSF	PEC Properties			FI	evation	and	Da		256	8412				Norti	<u> </u>	1427	7014.13
Location	Petrolia, Penn	svlvania			"	Cvation	ana	Du	aturri	128	31.32 N	IAVD 1	988	3	North		62 ⁻	1996.29
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Drilling	Bassett Enviro	nmental			 	ompleti	on D	001	·h	7	/20/04		Doo	k Depth		7/20)/04	
		Mounted Geoprob	.			ompieu	טווט	ері	LII		16 ft		RUC	к Беріп		6	.5 ft	
Size and	Type of Bit				Ni	ımber o	of Sa	mr	oles	Dist	urbed		T	Jndisturbed	i	Co		
Casing D	2" OD, 48" Lo riameter (in)	ng, Stainless Stee		Casing Depth (ft)	\vdash				,,,,,	Firs	ŀ	4	+	Completion		24	HR.	
	N/A	DAZ - S- L- (III)		NI/A	1	ater Le	•	•		∇		N/A		<u>▼</u>	N/A	\bar{Z}		N/A
Casing H	ammer N/A	Weight (lbs)	N/A	Drop (in) N/A	Dr	illing F	orem	nan		ave								
Sampler		ong disposable ace	etate liners	3	Ins	spectin	g En	gin		ave								
Sampler	Hammer Direct Po	ush Weight (lbs)	N/A	Drop (in) N/A					Cı		a Sch							
30L						Dept	h L	ъ	1	1	mple D	ata PIE	_	_	Re	ema	rks	
MATERIAL SYMBOL		Sample Descri	ription			Scal	e	Number	Type	(in)	Penetr. resist BL/6in	Read (ppr	ling	(D Fluid	rilling Fluid Loss, Dri	d, De _l ling F	oth of Ca	asing, ce, etc.)
5 <u>3 1/2</u> · 3 1/2 ·	_ Dark black organic To	DPSOIL. roots and	d leaf matt	ter (moist)		- 0	+	z		-	ш-ш	(ppi						
	Light brown SAND ar	d GRAVEL, some				Ε,	=			1		0			lected			- 4 - 4
0.0.	subangular gravel (dr	/)				- 1 -	7			1		0		100)/20	04_0.5	5-1.5 at
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50.0.						F	7			1		0						
3	Dark brown to black r	nedium grained SA	AND, sand	dstone fragements		3	7					0						
3	(dry)					E 4	7					0						
	Black and red fine to gravel (dry)	coarse grained SA	ND, with	shards, mixed	_	F 4	7					0			lected -03-21-(720	04 4-!	5 at
	Brown silty SAND, so	me weathered sar	ndstone (d	lry)		- - 5	7					0		101			· ·	
<u>E</u>						F	7			1		0						
5						6	}	7	SUC.	36		0						
	Light brown/orange S	ANDSTONE, fine	grained sa	and lenses,		E,]					0						
	micaceous, weak har fractured (moist)	dness & strength,	deep wea	thering, highly		_ ′	=			}		0						
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1000						<u>−</u> 18	=											
7						19	=											
5						E	}											



Drainet	ENGINEERING & I	ENVIRONMENTAL SERVICES	1	Log		Boring oject No.		В	H-0	3-22			Sheet	1 Foot	of	1
Project	Beazer/INI	OSPEC Properties			Pro	oject No.			2568	8412				East	14261	197 11
Location	Douzoniivi	501 E0 1 10portio			Ele	evation a	nd Da			, , , , _				North	20	
Orilling Agenc		ennsylvania			De	te Starte	d		1162	2.36 N	AVD 19		Finished		6213	321.03
miling Agenc	-	nvironmental			Da	ile Starte	u		7/	20/04		Jale I	rinished	7/	20/04	
Drilling Equipr		iviioninentai			Со	mpletion	Dep	th	- 11	20/04	F	Rock	Depth		20/04	
Y		ck Mounted Geoprobe							D:- (4 ft		1	Patrida ad		0.5 ft	
Size and Type		Long, Stainless Steel			Nu	mber of	Samp	oles	DISTU	ırbed	1	Un	disturbed	1	Core	
Casing Diame	eter (in) N/A		(Casing Depth (ft) N/A	Wa	ater Leve	el (ft.)		First		3.5	Co	mpletion N		24 HR. ▼ 1	V/A
Casing Hamm		Weight (lbs)	N/A	Drop (in) N/A	Dri	illing For	emar	1	<u> </u>		0.0			,,,,	<u> '</u>	.,,
Sampler		" long disposable acetate			Inc	na atina I	-nain		ave							
ampler Ham	mor	t Push Weight (lbs)	N/A	Drop (in) N/A	Ins	pecting I	=ngin		ietina	a Schv	varz					
۲_	Direc	it i doi!	14//-1	IN/A	_					nple Da				Dan		
MATERIAL SYMBOL		Sample Description	on			Depth Scale	Number	Туре	E. 00 E. 00	Penetr. resist BL/6in	PID Readii		(Drillin		narks Depth of Ca g Resistand	sing,
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	-	c TOPSOIL, roots and lead OSTONE, medium grained		, ,		Ē :	1				0		Collect	ted		
st	trength, deep we	athering, highly fractured	(moist))		1 -	1				0		BH-03		2004_0-1	at
Li	ight brown SAND	DSTONE, medium grained Iness & strength, deep we	d, fine o	grained sand	Н		1	ISH.			0		1408.			
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	Г	End of Boring @ 4 ft	<u> </u>			4	1				0		Satura		3.5 feet be	elow
		End of Borning @ 4 it				<u> </u>							Geopro	obe ter	minated a	at 4 f
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ENG	GINEERING & ENVIRO	NMENTAL SERVIC	ES	Log	of E	Boring		В	H-0	3-23			Sheet	1	of	1
Project					Pro	oject No.							E	ast		
Location	Beazer/INDSPEC	Properties				evation ar	A Da		2568	8412				lorth	1426	5072.239
Location	Petrolia, Pennsylv	vania			EIG	evation ar	iu Da	atum	116	:0 75 N	IAVD 19	ΩΩ		North	62.	1298.086
Drilling Agency	reliolia, reliisyl	/ai iia			Da	ite Started	t		110	0.75 N	D D	ate	Finished		02	1290.000
	Bassett Environm	nental							7	/14/04				7.	/14/04	
Drilling Equipmen					Co	mpletion	Dep	th				Rock	Depth			
Size and Type of B	Pickup Truck Mou	unted Geoprobe			-				Diet	4 ft urbed		Hie	ndisturbed	- 1,	N/A Core	
	2" OD, 48" Long,	Stainless Steel			Νu	ımber of S	Samp	ples	וסוטו	urbeu	1	01	luisturbeu		Core	
Casing Diameter	(in) N/A		C	Casing Depth (ft) N/A	w	ater Leve	l (ft.)		First	t	N/A		ompletion N//		24 HR.	N/A
Casing Hammer		Weight (lbs)	N1/A	Dron (in)	Dr	illing Fore	emar	n .	<u> </u>	•	IN/A	1 =	<u>¥</u> 1N//	٠ _	<u> </u>	IN/A
Sampler	N/A		N/A	N/A	+			G	reg L	andis						
Sampler Hammer	1.5" ID, 48" long	Weight (lhs)	ate liners	Drop (in) N/A	Ins	specting E	ngin	neer								
Sampler Hammer	Direct Push	Weight (155)	N/A	N/A			1	С		a Schumple D			1			
MATERIAL SYMBOL	0					Depth	ē						_ 	Ren	narks	
Black	Si	ample Descrip	otion			Scale	Number	Туре	Reco'	Penetr. resist BL/6in	Readir (ppm	ng	(Drilling Fluid Loss	Fluid, , Drillin	Depth of (ig Resista	Casing, nce, etc.)
Light	gray to orange GRA	AVEL, trace med	lium grain	ed sand (drv)		0 -	_		-		0	,	-			·
Black	to dark brown coars										0					
						- 1 -			1		0		Collecte		4404 4	0 -4
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						=	`	PUS	3		0					
Coars	se SAND and GRA\	/EL (dry)				3 -					0					
									•		0					
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Log of Boring BH-03-24 Sheet of 1 1 Project No. East Project Beazer/INDSPEC Properties 2568412 1426248.896 Location Elevation and Datum North 1159.43 NAVD 1988 Petrolia, Pennsylvania 621225.139 Drilling Agency Date Started Date Finished 7/15/04 7/15/04 Bassett Environmental **Drilling Equipment** Completion Depth Rock Depth Dolley Mounted Geoprobe 4 ft N/A Size and Type of Bit Disturbed Undisturbed Core Number of Samples 2" OD, 48" Long, Stainless Steel Casing Diameter (in) Casing Depth (ft) Completion 24 HR. First Water Level (ft.) N/A N/A 1.5 N/A \mathbf{V} N/A Drop (in) N/A Drilling Foreman Casing Hammer Weight (lbs) N/A N/A **Greg Landis** Sampler 1.5" ID, 48" long disposable acetate liners Inspecting Engineer Drop (in) N/A Weight (lbs) Sampler Hammer Direct Push Cristina Schwarz Sample Data MATERIAL SYMBOL Remarks Depth PID Number Penetr. resist BL/6in Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Type Template LANGAN.GD Scale Reading (ppm) Coarse SAND and GRAVEL (dry) 0 Collected BH-03-24-071504_0.5-1.5 at 0 Gray to black sandy GRAVEL, some weathered sandstone ∇ 1445. fragments (wet) 0 2 2 Q:/DATA4/2568401/DATA FROM PHILLY/OFFICE DATA/GINT LOGS\INDSPEC BORING LOGS.GPJ ... 11/2/2009 3:01:17 PM ... Report Log - LANGAN .. 3 Geoprobe terminated at 4 feet End of Boring @ 4 ft below ground surface. 5 6 8 9 10 12 13 14 15 16 17 18 19



Log of Boring BH-03-25 Sheet of 1 1 Project No. East Project Beazer/INDSPEC Properties 2568412 1426056.821 Location Elevation and Datum North 1162.88 NAVD 1988 620940.739 Petrolia, Pennsylvania Drilling Agency Date Started Date Finished 7/14/04 7/14/04 **Bassett Environmental Drilling Equipment** Completion Depth Rock Depth Pickup Truck Mounted Geoprobe 4 ft N/A Size and Type of Bit Disturbed Undisturbed Core Number of Samples 2" OD, 48" Long, Stainless Steel Casing Diameter (in) Casing Depth (ft) Completion 24 HR. First Water Level (ft.) N/A N/A N/A N/A \mathbf{V} N/A Drop (in) N/A Drilling Foreman Casing Hammer Weight (lbs) N/A N/A **Greg Landis** Sampler 1.5" ID, 48" long disposable acetate liners Inspecting Engineer Drop (in) N/A Weight (lbs) Sampler Hammer Direct Push Cristina Schwarz Sample Data MATERIAL SYMBOL Remarks Depth Number Penetr. resist BL/6in Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) GAN.GD Scale (ppm) ASPHALT Subangular GRAVEL (dry) 0 Light brown medium to course grained SAND and GRAVEL (dry) 0 Collected BH-03-25-071404_1-2 at Light gray sandy GRAVEL (dry) 0 42 1413. 2 0 0 Black coarse SAND, some silt, trace mottles (dry) 3 0 Q:DATA4/268401/DATA FROM PHILLY/OFFICE DATA/GINT LOGS/INDSPEC BORING LOGS.GPJ ... 11/2/2009 3:01:21 PM ... Report: Log 0 Geoprobe terminated at 4 feet 0 End of Boring @ 4 ft below ground surface. 5 6 8 9 10 12 13 15 16 17 18 19



EN	IGINEERING & ENVIRO	NMENTAL SERVIC	ES	Log	of Boring		В	H-0	3-26	<u> </u>		Sheet	1	of	1
Project					Project No	٥.							East		
	Beazer/INDSPEC	C Properties			- ·				8412				ļ		927.62
Location	5				Elevation	and D	atum			IAN (D. 46			North		=
Drilling Agency	Petrolia, Pennsylv	vania			Date Star	ted		116	4.83 N	IAVD 19		Finished	1	620	883.5
Jiming Agonoy	Bassett Environm	nental			Buto otar	iou		7	/14/04		Julio	, i illionou		7/14/04	
Drilling Equipmer		icitai			Completio	n Dep	oth		7 1 - 1 / 0 - 1		Rock	k Depth		7714704	
	Pickup Truck Moi	unted Geoprobe							4 ft	:				N/A	
Size and Type of		Ctainless Ctasl			Number o	f Sam	ples	Dist	urbed	1	U	ndisturbed		Core	
Casing Diameter	2" OD, 48" Long,	Stairliess Steel		Casing Depth (ft)				First	t	1	c	ompletion		24 HR.	
	N/A			NI/A	Water Le			∇		N/A			I/A	$ar{ar{ar{\Lambda}}}$	N/A
Casing Hammer	N/A	Weight (lbs)	N/A	Drop (in) N/A	Drilling Fo	oremai									
Sampler	1.5" ID, 48" Long	Disposable Ace	etate Line	vro.	Inspecting	. Engir		reg L	andis						
Sampler Hamme		Meight (lbc)	N/A	Drop (in) N/A	Inspecting	Liigii		rietin	a Sch	N2r7					
. .	Direct Fusit		IN/A	IN/A	1				mple D						
MATERIAL	S	ample Descrip	ntion		Depti	ı ja	l e					(Drilli	Re	marks	ooina
SYI	O	ampie Becom	711011		Scale	Number	Type	Rec (ir	Penetr. resist BL/6in	Readii (ppm	ng 1)	Fluid Lo	ss, Drill	, Depth of C ing Resistar	nce, etc
ASP	HALT				- 0	+				0					
Light	brown gravelly SAN	ND (dry)			 	4				0					
C, C					F 1	=				0					
/\6//4	sandy/clayey subar		(dry)			₫_	USH	36		0					
	dish brown gravelly S				_	∃`	PU	3		0		Collec		71404 2-	3 at
Light	brown sandy SILT,	some subangula	ar gravel	(moist)	E 3	Ē				0		1230.		7 1404_2	Jai
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E	NGINEERING & ENVIRO	NMENTAL SERVICES		Log	of Boring		В	H-0	3-27			Sheet	1	of	1
Project					Project No.								East		
	Beazer/INDSPEC	C Properties			Flavortian a	I D		2568	3412				N a atla		6013.65
Location	Datuslia Damasul				Elevation a	na Da	atum	440	2.4.817	N /D 40			North		0000 04
Drilling Agency	Petrolia, Pennsyl	varila			Date Starte	ed		116	3.4 NA	AVD 19		Finished		62	0389.64
3 3 1	Bassett Environm	nental						7/	/14/04					7/14/04	
Drilling Equipme					Completion	n Dep	th				Roc	k Depth			
	Pickup Truck Mo	unted Geoprobe							4 ft	:				1 ft	
Size and Type o	f Bit 2" OD, 48" Long,	Stainless Steel			Number of	Sam	ples	Distu	ırbed	1	lu	Indisturbed		Core	
Casing Diamete		Stall liess Steel	Cas	ing Depth (ft)	\\/ -t	-1 /&)		First		<u>į</u>	c	Completion		24 HR.	
	N/A	Maight (lha)		N/A	Water Leve			$\bar{\Delta}$		N/A		<u>¥</u>	N/A	$ar{ar{\Lambda}}$	N/A
Casing Hammer	N/A	Weight (lbs)	N/A	Drop (in) N/A	Drilling For	emai		roa l	andia						
Sampler	1.5" ID, 48" Long	g Disposable Acetate	Liners		Inspecting	Engir		reg L	andis						
Sampler Hamme	er Direct Push	Weight (lbs)	N/A	Drop (in) N/A]	Ū		ristina	a Sch	warz					
-i-	200(1 00				1				nple D						
SYMBOL	S	ample Description	า		Depth Scale	Number	Type		Penetr. resist BL/6in	PIE Read		(Dril	Ke ling Fluid	marks	Casing,
AM.						N N	þ	Rec	Pe a	(ppr	m)	Fluid L	oss, Drill	I, Depth of ling Resista	ance, etc.)
ASF	PHALT				0 -	-				0					
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	k gray gravelly CLAY Idish brown SANDST				- ∕‡ '	‡				0		Colle		71404_1	l-2 at
	ngth, deep weathering			Hardiness &	_ 2 -	_ E	USF.	34		0		1328			
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ENC	GINEERING & ENVIRO	NMENTAL SERVIC	ES	Log	of E	Boring		В	BH-C	3-28			Sheet	1	of	1
Project					Pr	oject No.								East		
	Beazer/INDSPEC	Properties			L					8412					142	5806.442
Location	5 5				E	evation a	nd Da	atum						North		
Drilling Agency	Petrolia, Pennsylv	/ania			D	ate Starte	d		116	6.36 N	IAVD 19		Finished		62	20275.78
Drilling Agency	Bassett Environm	nental				ato Otario	u		7	/14/04		Juic	i illistica	7	/14/04	
Drilling Equipment		icritai			Co	ompletion	Dep	th		/ 17/07		Rock	Depth		7 1 7 7 0 7	
	Pickup Truck Mou	unted Geoprobe								4 ft	:				N/A	
Size and Type of E		Ctainless Ctasl			Nı	umber of	Sam	ples	Dist	urbed		Ur	ndisturbed		Core	
Casing Diameter (2" OD, 48" Long,	Stainless Steel		Casing Depth (ft)	1				First	t	1	C	ompletion		24 HR.	
	N/A			N/A		ater Leve			$ \nabla$	•	N/A		<u>▼</u> N/.		$ar{ar{\Lambda}}$	N/A
Casing Hammer	N/A	Weight (lbs)	N/A	Drop (in) N/A	Dr	rilling For	emar									
Sampler	1.5" ID, 48" Long	Disposable Ace	etate Line	rs	In	specting	Engir		reg L	andis						
Sampler Hammer		Weight (lhs)	N/A	Drop (in) N/A	 '''	opcomig	Liigii		seon.	Hanna						
	Directi dali		111/75	IV/A	_			00		mple D				_		
SYMBOL	S	ample Descrip	ntion			Depth	ber	e		etr. ist Sin	PID		(Drilling	Rer	narks	Saeina
SYI		p.c 20001p				Scale	Number	Туре	Rec (in	Penetr. resist BL/6in	Readii (ppm		(Drilling Fluid Loss	s, Drillir	ng Resista	nce, etc.)
	black organic TOPS					上 0 -					0					
Gray	subangular GRAVE	L, some silt and	sand (dr	y)		F ,	†		1		0					
/////// Dark	gray to black CLAY	, some fine grain	ed sands	and gravel (very		<u></u>	1				0		Collecte		1101 1	2 ot
moist)					F ,	-	SH	30		0		1110.	-28-07	1404_1	-2 at
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Log of Boring BH-03-29 Sheet of 1 1 Project No. East Project 1425725.277 Beazer/INDSPEC Properties 2568412 Location Elevation and Datum North 1168.94 NAVD 1988 619578.05 Petrolia, Pennsylvania Drilling Agency Date Started Date Finished 7/20/04 7/20/04 Langan Engineering & Environmental Drilling Equipment Completion Depth Rock Depth Hand Auger 2ft N/A Size and Type of Bit Disturbed Undisturbed Core Number of Samples 3 1/4" OD, 6" Long, Stainless Steel 2 Casing Diameter (in) Casing Depth (ft) Completion 24 HR. First Water Level (ft.) N/A N/A N/A N/A \mathbf{V} N/A Drop (in) N/A Drilling Foreman Casing Hammer Weight (lbs) N/A N/A N/A Sampler Stainless Steel Hand Auger Inspecting Engineer Drop (in) N/A Weight (lbs) Sampler Hammer N/A Jason Hanna Sample Data MATERIAL SYMBOL Remarks Depth Number Penetr. resist BL/6in Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Type ANGAN.GD Reading (ppm) Scale Subangular GRAVEL (moist) *HA 7 Collected Light brown sandy SILT, some subangular gravel and sandstone *HA 9 BH-03-29-072004_1-2 at N fragements (moist) Q:DATA4/2568401/DATA FROM PHILLY/OFFICE DATA/GINT LOGS\\NDSPEC BORING LOGS.GPJ ... 11/2/2009 3:01:33 PM ... Report Log - LANGAN .. End of Boring @ 2 ft Hand Auger refusal encountered at 2.0 feet below 3 ground surface. 5 6 8 9 10 12 13 14 15 16 17 18 19



Log of Boring BH-03-30 Sheet of 1 1 Project No. East Project 1425891.801 Beazer/INDSPEC Properties 2568412 Location Elevation and Datum North 1165.15 NAVD 1988 620755.066 Petrolia, Pennsylvania Drilling Agency Date Started Date Finished 7/14/04 7/14/04 Bassett Environmental **Drilling Equipment** Completion Depth Rock Depth Pickup Truck Mounted Geoprobe 4 ft N/A Size and Type of Bit Disturbed Undisturbed Core Number of Samples 2" OD, 48" Long, Stainless Steel Casing Diameter (in) Casing Depth (ft) Completion 24 HR. First Water Level (ft.) N/A N/A N/A N/A \mathbf{V} N/A Drop (in) N/A Drilling Foreman Casing Hammer Weight (lbs) N/A N/A **Greg Landis** Sampler 1.5" ID, 48" Long Disposable Acetate Liners Inspecting Engineer Drop (in) N/A Weight (lbs) Sampler Hammer Direct Push Cristina Schwarz Sample Data MATERIAL SYMBOL Remarks Depth PID Number Penetr. resist BL/6in Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) LANGAN.GD Scale Reading (ppm) **ASPHALT** Brown gravelly SAND, trace silt (dry) 0 0 Collected 0 30 Brown gravelly SAND, some clay, trace silt (dry) 2 BH-03-30-071404_1.5-2.5 at 0 1209. Q:DATA4/2568401/DATA FROM PHILLY/OFFICE DATA/GINT LOGS\\NDSPEC BORING LOGS.GPJ ... 11/2/2009 3:01:36 PM ... Report Log - LANGAN 0 3 0 0 Geoprobe terminated at 4 feet 0 End of Boring @ 4 ft below ground surface. 5 6 8 9 10 12 13 14 15 16 17 18 19



Log of Boring BH-03-31 Sheet of 1 1 Project No. East Project Beazer/INDSPEC Properties 2568412 1426023.699 Location Elevation and Datum North 1164.45 NAVD 1988 620701.147 Petrolia, Pennsylvania Drilling Agency Date Started Date Finished 7/14/04 7/14/04 **Bassett Environmental Drilling Equipment** Completion Depth Rock Depth Pickup Truck Mounted Geoprobe 4 ft N/A Size and Type of Bit Disturbed Undisturbed Core Number of Samples 2" OD, 48" Long, Stainless Steel Casing Diameter (in) Casing Depth (ft) Completion 24 HR. First Water Level (ft.) N/A N/A N/A N/A \mathbf{V} N/A Drop (in) N/A Drilling Foreman Casing Hammer Weight (lbs) N/A N/A **Greg Landis** Sampler 1.5" ID, 48" Long Disposable Acetate Liners Inspecting Engineer Drop (in) N/A Weight (lbs) Sampler Hammer Direct Push Cristina Schwarz Sample Data MATERIAL SYMBOL Remarks Depth Number Penetr. resist BL/6in Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) JGAN.GD Scale (ppm) Light gray subangular GRAVEL (dry) 0 0 Collected Light brown medium to coarse grained SAND, some silt and BH-03-31-071404_1-2 at subangular gravel (dry) 0 1346. Dark gray to black coarse SAND and GRAVEL (dry) 48 2 0 Q:/DATA4/2568401/DATA FROM PHILLY/OFFICE DATA/GINT LOGS/INDSPEC BORING LOGS.GPJ ... 11/2/2009 3:01:39 PM ... Report: Log - LANGAN 0 Light gray fine grained SAND, trace silt, mottled (dry) 3 0 0 Geoprobe terminated at 4 feet 0 End of Boring @ 4 ft below ground surface. 5 6 8 9 10 12 13 15 16 17 18 19



Log of Boring BH-03-32 Sheet of 1 1 Project No. East Project Beazer/INDSPEC Properties 2568412 1425990.891 Location Elevation and Datum North 1165.12 NAVD 1988 620235.464 Petrolia, Pennsylvania Date Started **Drilling Agency** Date Finished 8/5/04 8/5/04 Langan Engineering & Environmental Drilling Equipment Completion Depth Rock Depth Hand Auger 4 ft N/A Size and Type of Bit Disturbed Undisturbed Core Number of Samples 3 1/4" OD, 6" Long, Stainless Steel Casing Diameter (in) Casing Depth (ft) Completion 24 HR. First Water Level (ft.) N/A N/A N/A N/A \mathbf{V} N/A Drop (in) N/A Drilling Foreman Casing Hammer Weight (lbs) N/A N/A N/A Sampler Stainless Steel Hand Auger Inspecting Engineer Drop (in) N/A Weight (lbs) Sampler Hammer N/A Dennis Webster Sample Data MATERIAL SYMBOL Remarks Depth Number Penetr. resist BL/6in Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Type GAN.GD Reading (ppm) Scale Light gray subangular GRAVEL, trace silty sand (dry) 7 Brown silty SAND, with subangular GRAVEL, trace black and brown Collected *HA 7 BH-03-32-080504_1-2 at clay lenses (moist) 0800. 2 Soil discoloration from 1 to 2 feet below ground surface. 7 3 Brown silty SAND, with subangular GRAVEL, trace black and brown ω clay lenses, some sandstone fragements (moist) Hand Auger refusal Q:DATA4\2568401\DATA FROM PHILLY\OFFICE DATA\GINT LOGS\INDSPEC BORING LOGS.GPJ ... 11/2\2009 3:01:42 PM ... Report End of Boring @ 4 ft encountered at 4 feet below ground surface. 5 6 8 9 10 12 13 14 15 16 17 18 19



Log of Boring BH-03-33 Sheet of 1 1 Project Project No. East Beazer/INDSPEC Properties 2568412 1425745.593 Location Elevation and Datum North Petrolia, Pennsylvania 1167.77 NAVD 1988 619936.55 Drilling Agency Date Started Date Finished 7/14/04 7/14/04 Langan Engineering & Environmental Drilling Equipment Completion Depth Rock Depth Hand Auger 4 ft N/A Size and Type of Bit Disturbed Undisturbed Core Number of Samples 3 1/4" OD, 6" Long, Stainless Steel Casing Diameter (in) Casing Depth (ft) Completion 24 HR. First Water Level (ft.) N/A N/A N/A N/A \mathbf{V} N/A Drop (in) N/A Drilling Foreman Casing Hammer Weight (lbs) N/A N/A N/A Sampler Stainless Steel Hand Auger Inspecting Engineer Drop (in) N/A Weight (lbs) Sampler Hammer N/A Jason Hanna Sample Data MATERIAL SYMBOL Remarks Depth Number Penetr. resist BL/6in Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Scale (ppm) Subangular GRAVEL with SILT, trace fine sands (dry) 0 2.7 0 Collected BH-03-33-071404_1-2 at 0 1015. 30 2 0 Gray and brown CLAY, some subangular gravel (moist) 3 Poor recovery. Geoprobe terminated at 4 feet Q:DATA4\2568401\DATA FROM PHILLY\OFFICE DATA\GINT LOGS\INDSPEC BORING LOGS.GPJ ... 11/2/2009 3:01:45 PM ... Report: End of Boring @ 4 ft below ground surface. 5 6 8 9 10 12 13 15 16 17 18 19



Log of Boring BH-03-34 Sheet of 1 1 Project No. East Project Beazer/INDSPEC Properties 2568412 1427733.108 Location Elevation and Datum North 1413.84 NAVD 1988 622333.459 Petrolia, Pennsylvania Date Started **Drilling Agency** Date Finished 7/20/04 7/20/04 **Bassett Environmental Drilling Equipment** Completion Depth Rock Depth Pickup Truck Mounted Geoprobe 8 ft 4.5 ft Size and Type of Bit Disturbed Undisturbed Core Number of Samples 2" OD, 48" Long, Stainless Steel Casing Diameter (in) Casing Depth (ft) Completion 24 HR. First Water Level (ft.) N/A N/A N/A \mathbf{V} N/A N/A Drop (in) N/A Drilling Foreman Casing Hammer Weight (lbs) N/A Dave Sampler 1.5" ID, 48" Long Disposable Acetate Liners Inspecting Engineer Drop (in) N/A Weight (lbs) Sampler Hammer Direct Push Cristina Schwarz Sample Data MATERIAL SYMBOL Remarks Depth Number Penetr. resist BL/6in Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) -ANGAN.GD Scale (ppm) Dark brown organic TOPSOIL, some roots (moist) Brown sandy CLAY, with sandstone fragements (moist) 0 Collected BH-03-34-072004_0.5-1.5 at Light brown silty SAND, with sandstone fragements (moist) 0 0905. Light brown fine to medium grained SAND, some micaceous 0 sandstone fragements (dry) 36 2 Collected 0 BH-03-34-072004_2-3 at 0 0915 3 0 0 0 0 Light brown SANDSTONE, fine to medium grained, weak hardness 5 & strength, deep weathering, highly fractured (dry) 0 0 PUSH 43 6 0 0 0 0 Geoprope refusal encountered 0 End of Boring @ 8 ft Q:\DATA4\2568401\DATA FROM PHILLY\OFFICE DATA\GINT LOGS\INDSPEC BORING LOGS.GPJ at 8 feet below ground surface. 9 10 12 13 15 16 18 19



BH-05-01 Sheet Log of Boring of 1 1 Project No. East Project Beazer/INDSPEC Properties 2568412 1426010.17 Location Elevation and Datum North Petrolia, Pennsylvania 1169.1 NAVD 1988 619761.46 Drilling Agency Date Started Date Finished 8/8/05 **Bassett Environmental** 8/8/05 **Drilling Equipment** Completion Depth Rock Depth Track Mounted Geoprobe 6620 15.5 ft 14 ft Size and Type of Bit Disturbed Undisturbed Core Number of Samples 2" OD, 60" Macrocore 3 N/A N/A Casing Diameter (in) Casing Depth (ft) Completion 24 HR. First Water Level (ft.) N/A 6.7 6 5.7 N/A Drop (in) N/A Casing Hammer Weight (lbs) Drilling Foreman N/A N/A **Greg Landis** Sampler 1.5" ID, 60" Macrocore Inspecting Engineer Drop (in) Auto Weight (lbs) Sampler Hammer Auto Dennis Webster Sample Data MATERIAL SYMBOL Remarks Depth PID Number Penetr. resist BL/6in Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Type emplate LANGAN.GD Scale Reading (ppm) Light brown f-m grained SAND (dry) 0 Set 1" temporary well point to 15.5' bgs, with a 10' pvc 0 screen and 5.5' pvc riser. 0 2 Light resistance. 0 Black silty SAND, some clay, trace fine to coarse angular gravel 1SI Id 32 (moist) 0 3 0 Moderate resistance. 0 Black soil staining observed 0 from 4.0' to 12.0' bgs. 28.1 Black m-c grained SAND, some clay, and mixed angular gravel (dry) 5 Collected BH-05-01_4.5-5.0 at 27.2 15:30 7.9 6 10.1 ∇ 2.7 Saturated soils encountered at 22.1 Light gray silty CLAY, trace f-m grained sand (wet) 54 Light to moderate resistance. 32.3 8 Strong odor from 8.0' to 14.0' 27.1 32.1 9 30.1 Black/gray soil staining. 26.1 18.1 Black c gravelly CLAY, some fine silt and sand (wet) 12.1 2.3 Visible sheen observed at 4.7 12 11.5' to 13.5' bgs. 5.8 9 0 Moderate resistance. 13 Collected BH-05-01_13.0-13.5 O Black c gravelly CLAY, some weathered sandstone fragements at 15:50 0 14 0 0 15 0 Q:\DATA4\2568401\DATA FROM PHILL\ Geoprobe refusal at 15.5' bgs. 0 End of Boring @ 15.5 ft 16 17 18 19



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BH-05-03 Sheet Log of Boring of 1 1 Project No. East Project Beazer/INDSPEC Properties 2568412 1426012.24 Location Elevation and Datum North Petrolia, Pennsylvania 1168.7 NAVD 1988 619794.56 Drilling Agency Date Started Date Finished 8/8/05 8/8/05 **Bassett Environmental Drilling Equipment** Completion Depth Rock Depth Track Mounted Geoprobe 6620 13.2 ft 13.2 ft Size and Type of Bit Disturbed Undisturbed Core Number of Samples 2" OD. 60" Macrocore 3 N/A N/A Casing Diameter (in) Casing Depth (ft) Completion 24 HR. First Water Level (ft.) N/A 6.5 5.7 5.7 N/A Drop (in) N/A Drilling Foreman Casing Hammer Weight (lbs) N/A N/A **Greg Landis** Sampler 1.5" ID, 60" Macrocore Inspecting Engineer Drop (in) Auto Weight (lbs) Sampler Hammer Auto Dennis Webster Sample Data MATERIAL SYMBOL Remarks Depth PID Number Penetr. resist BL/6in Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Type Template LANGAN.GD Scale Reading (ppm) Brown f-m SAND with some clay and trace of black silty sand (dry) 0 Poor recovery. 0 Little to no resistance. O 2 Yellowish brown gravelly SAND, some silty clay, trace of Set well point to 11.2' bgs with 0 PUSH Report: Log - LANGAN 2 a 10' screen and 6' PVC riser. subrounded f gravel (dry) 0 3 0 0 \cdot 4 0 Moderate resistance. 0 Dark reddish brown poorly sorted SAND, some red bricks and 5 5.8 concrete (dry) 11/2/2009 3:02:00 PM Collected BH-05-03_5.25-5.75 72.1 at 17:30. 6 68.1 Saturated soils encountered at 2.9 6.5' bgs. 5.9 Black silty SAND, some subangular c gravel (wet) PUSH 9 α Slight odor with visible sheen 6.1 8 observed from 5.0' to 10.5' 3.3 BORING LOGS.GPJ bgs. 0 9 0 Light to dark gray silty CLAY, some f subrounded gravel (wet) 0 Moderate resistance. 2.1 0 1.3 Collected BH-05-03_11.0-11.5 at 17:50. 36 က 1.2 12 3.3 0 Q:\DATA4\2568401\DATA FROM PHILLY\OFFICE DATA\GINT Dark gray silty CLAY, some f-m sands (wet) 13 Geoprobe refusal encountered Light reddish brown SANBSTIANEO 13.2 ft at 13.2' bgs. 14 15 16 17 18 19



BH-05-04 Sheet Log of Boring of 2 1 Project No. East Project Beazer/INDSPEC Properties 2568412 1425889.18 Location Elevation and Datum North Petrolia, Pennsylvania 1166.42 NAVD 1988 619777.76 Drilling Agency Date Started Date Finished 8/8/05 **Bassett Environmental** 8/8/05 **Drilling Equipment** Rock Depth Completion Depth Track Mounted Geoprobe 6620 20 ft 19.5 ft Size and Type of Bit Disturbed Undisturbed Core Number of Samples 2" OD. 60" Macrocore N/A N/A Casing Diameter (in) Casing Depth (ft) Completion 24 HR. First Water Level (ft.) N/A N/A N/A N/A Drop (in) N/A Casing Hammer Weight (lbs) Drilling Foreman N/A N/A **Greg Landis** Sampler 1.5" ID, 60" Macrocore Inspecting Engineer Drop (in) A<u>uto</u> Weight (lbs) Sampler Hammer Auto Dennis Webster Sample Data Remarks MATERIAI SYMBOL Depth PID Number (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Sample Description Scale Reading (ppm) Asphalt 0 Black and gray subangular to angular GRAVEL (dry) 0.8 Light to moderate resistance. 1.2 2 Light brown to reddish brown medium grained SAND, some 7 HSI Id 30 subangular gravel, trace of dark gray silty clay (moist) 0.5 3 0 O 0 \cdot Moderate resistance 0 0 Light to dark brown silty CLAY, some fine to medium grained sands 5 (dry) 12 1.5 6 7.7 Collected BH-05-04_6.5-7.0 at 10.1 16:45. 11.2 Saturated soils at 7.0' bgs. 9 12.7 Slight sheen observed from 8 7.0'-8.5' bgs. 14.1 Slight odor observed from 7.5' Dark fine grained silty SAND, some clay (saturated) to 12.5' bgs. 9 0.9 0 0 0 Light to dark gray silty CLAY, some fine sand, mixed amounts of 0 angular to subrounded gravel (saturated) 1.3 12 Collected BH-05-04_12.0-12.5 1.4 54 က at 17:00. 2.5 13 0 0 14 0 0 0 Dark gray gravelly CLAY, some fine silt and sands (wet) n 16 0 Moderate resistance 0 17 0 HSI Id Brown poorly sorted sandy GRAVEL, some clay (wet) 9 0 18 0 0 19 0 Geoprobe refusal encountered 0 at 20.0' bgs. 0 Light brown medium grained SANDSTONE (wet)



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Log of Boring BH-05-04 Sheet 2 of 2 Project No. East 1425889.18 Beazer/INDSPEC Properties 2568412 Location Elevation and Datum North Petrolia, Pennsylvania 1166.42 NAVD 1988 619777.76 Sample Data Remarks Depth Scale PID Reading (ppm) Recov. (in)
Penetr. resist
BL/6in Number Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) 20 End of Boring @ 20 ft 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 42 43



Log of Boring BH-05-05 Sheet of 1 1 Project No. East Project Beazer/INDSPEC Properties 2568412 1425926.79 Location Elevation and Datum North 1166.65 NAVD 1988 619800.24 Petrolia, Pennsylvania Drilling Agency Date Started Date Finished 8/9/05 8/9/05 **Bassett Environmental Drilling Equipment** Completion Depth Rock Depth Track Mounted Geoprobe 6620 15 ft 15 ft Size and Type of Bit Disturbed Undisturbed Core Number of Samples 2" OD, 60" Macrocore 3 N/A N/A Casing Diameter (in) Casing Depth (ft) Completion 24 HR. First Water Level (ft.) N/A N/A N/A N/A Drop (in) N/A Drilling Foreman Casing Hammer Weight (lbs) N/A N/A **Greg Landis** Sampler 1.5" ID, 60" Macrocore Inspecting Engineer Drop (in) Auto Weight (lbs) Sampler Hammer Auto Dennis Webster Sample Data MATERIAL SYMBOL Remarks Depth PID Number Penetr. resist BL/6in Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Type ANGAN.GD Scale Reading (ppm) Asphalt Black and gray coarse subangular GRAVEL (dry) 0 Heavy resistance. 0 0 2 Moderate resistance. 0 HSI Id 24 0 3 0 0 Reddish orange/brown silty CLAY, some fine sand (moist) 0 0 Observed black soil staining 0 from 4.5' to 6.5' bgs. 5 0 Collected BH-05-05_4.5-5.0 at 0 8:55. 6 0 1.3 Moderate resistance. 2.1 9 0 8 Light to dark gray firm CLAY, some dark black silt/sands (wet) 0 Collected BH-05-05_8.25-8.75 0 at 9:10. $\sqrt{}$ 9 0 Encountered saturated soils at 9.0' bgs. 0 10 Light brown gravelly CLAY (wet) 0 0 0 0 12 Light to dark gray silty CLAY, some fine sands, mixed amounts of 0 54 angular and subrounded coarse gravel (wet) 0 Moderate to light resistance. 13 n 0 14 0 Q:\DATA4\2568401\DATA FROM PHILLY\OFFICE 0 End of Boring @ 15 ft 16 17 18 19



BH-05-07 Sheet 2 Log of Boring of 1 Project No. East Project Beazer/INDSPEC Properties 2568412 1425967 Location Elevation and Datum North Petrolia, Pennsylvania 1167.1 NAVD 1988 620047 Date Started **Drilling Agency** Date Finished 9/7/05 9/7/05 **Bassett Environmental Drilling Equipment** Completion Depth Rock Depth Track Mounted Geoprobe 6620 21.5 ft 12.5 ft Size and Type of Bit Disturbed Undisturbed Number of Samples 2" OD, 48" Long, Stainless Steel 10 N/A N/A Casing Diameter (in) Casing Depth (ft) Completion 24 HR. First Water Level (ft.) N/A N/A N/A N/A Drop (in) N/A Drilling Foreman Casing Hammer Weight (lbs) N/A N/A **Greg Landis** Sampler 1.5" ID, 60" Macrocore Inspecting Engineer Drop (in) A<u>uto</u> Weight (lbs) Sampler Hammer Dennis Webster Auto Sample Data MATERIAL SYMBOL Remarks Depth PID Number Penetr. resist BL/6in Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Type LANGAN.GD Scale (ppm) Started 8" concrete coring at CONCRETE (10" thick) 9:50. 0 Dark black staining; slight Black/gray subangular f GRAVEL from 10" to 14" bgs 0 Ϋ́ Stoppped 8" coring at 11:00. 0 CONCRETE from 14" to 30" bgs Used geoprobe with concrete 0 bit to break up remaining 2 concrete. 0 0 Dark gray subangular f GRAVEL, some light brown sandy silt, trace of clay (wet) 3 0 ∞ 0 ∇ Saturated soils at 4.0' bgs. 0 Black clayey f grained SAND, some subangular f gravel (wet) Poor recovery. 0 Due to poor recovery, 2' soil samples were collected. 5 0 24 Moderate resistance to 8' bgs. 0 6 0 Collected BH-05-07_6.5-7.0 at 0 12:00. 7 0 Strong odor. HSI 24 3 0 8 0 Dark gray clayey SAND, some subangular f gravel (moist) 0 9 0 24 0 10 n 0 0 24 2 0 12 0 Strong odor. Light brown f grained SAND, some clay and sandstone fragments 0 (moist) 13 0 24 ဖ 0 Light brown to dark gray clayey SAND, some sandstone fragments 0 (moist) 0 9



Log of Boring BH-05-07 Sheet 2 of 2 Project No. East Beazer/INDSPEC Properties 1425967 2568412 Elevation and Datum North Location Petrolia, Pennsylvania 1167.1 NAVD 1988 620047 Sample Data Remarks Depth Scale Recov. (in) Penetr. resist BL/6in Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Reading (ppm) 15 0 0 Poor recovery. 9 16 0 0 17 0 24 0 18 0 Q:DATA42568401/DATA FROM PHILLY/OFFICE DATA/GINT LOGS\INDSPEC BORING LOGS.GPJ ... 11/2/2009 3:02:17 PM ... Report Log - LANGAN ...Template LANGAN, GDT 0 19 0 0 20 0 Collected BH-05-07_20.5-21.0 0 at 13:00. Dark brown weathered SANDSTONE fragments (moist) 9 21 0 Geoprobe refusal encountered End of Boring @ 21.5 ft at 21.5' bgs. 22 23 24 25 26 27 28 29 30 31 32 33



Log of Boring BH-05-08 Sheet of 1 1 Project No. East Project Beazer/INDSPEC Properties 2568412 1426074.58 Location Elevation and Datum North 1170.01 NAVD 1988 620099.83 Petrolia, Pennsylvania Date Started **Drilling Agency** Date Finished 8/9/05 8/9/05 **Bassett Environmental Drilling Equipment** Completion Depth Rock Depth Track Mounted Geoprobe 6620 15.5 ft 15.5 ft Size and Type of Bit Disturbed Undisturbed Core Number of Samples 2" OD, 60" Macrocore 3 N/A N/A Casing Diameter (in) Casing Depth (ft) Completion 24 HR. First Water Level (ft.) N/A 10.2 N/A N/A N/A Drop (in) N/A Drilling Foreman Casing Hammer Weight (lbs) N/A N/A **Greg Landis** Sampler 1.5" ID, 60" Macrocore Inspecting Engineer Drop (in) A<u>uto</u> Weight (lbs) Sampler Hammer Auto Dennis Webster Sample Data MATERIAL SYMBOL Remarks Depth PID Number Penetr. resist BL/6in Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Type -ANGAN.GD Scale (ppm) Heavy resistance. Asphalt, mixed amounts of subangular gravel, trace of 0 concrete/bricks (dry) 2.7 Light brown silty CLAY, some fine grain sand, mixed amounts of 0 subangular/subrounded gravel 1.7 2 8.8 2.1 Moderate resistance. 3 0.9 8 0.5 Poor recovery. Light brown to orange silty CLAY, increased amounts of subangular.subrounded gravel Black soil staining and 0.8 smearing, slight chemical 0 5 5.9 Collected BH-05-08_4.5-5.0 at 12:10. 6.7 6 8.2 10.1 0 Light brown to dark gray gravelly CLAY, trace of sandstone 0 8 fragments 0 HSſ 42 Note depth to creek from 0 ground surface to 9.0' bgs. 9 0 0 10 0 Soils saturated at 10.25' bgs. 0 Moderate resistance. 0 Collected BH-05-08 11.5-12.0 0 12 at 12:25. 0 0 HSN 13 n 50 0 Dark brown red to black soil 14 0 staining with a slight odor. 0 Q:\DATA4\2568401\DATA FROM PHILLY\OF 15 0 Light brown medium grained SANDSTONE End of Boring @ 15.5 ft Refusal at 15.5' bgs. 0 16 17 18 19



BH-05-09 Sheet Log of Boring of 1 1 Project No. East Project Beazer/INDSPEC Properties 2568412 1426080.31 North Location Elevation and Datum Petrolia, Pennsylvania 1170.32 NAVD 1988 620119.27 Drilling Agency Date Started Date Finished 8/9/05 8/9/05 **Bassett Environmental Drilling Equipment** Rock Depth Completion Depth 16 ft Track Mounted Geoprobe 6620 16 ft Size and Type of Bit Disturbed Undisturbed Core Number of Samples 2" OD, 60" Macrocore 3 N/A N/A Casing Diameter (in) Completion 24 HR. Casing Depth (ft) First Water Level (ft.) 10.7 N/A N/A N/A N/A Drop (in) N/A Drilling Foreman Casing Hammer Weight (lbs) N/A N/A **Greg Landis** Sampler 1.5" ID, 60" Macrocore Inspecting Engineer Drop (in) A<u>uto</u> Weight (lbs) Sampler Hammer Auto Dennis Webster Sample Data MATERIAL SYMBOL Remarks Depth PID Number Penetr. resist BL/6in Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Type Template LANGAN.GD Scale Reading (ppm) Heavy resistance. Asphalt, miscellaneous fill (concrete, bricks), subangular gravel (dry) 0 0 0 Light brown SILT, some clay, traces of sand, mixed amounts of subangular gravel (dry) 21 2 Moderate to light resistance. 3.3 LANGAN 1.7 3 2.7 Light brown silty CLAY, mixed amounts of poorly graded subangular 9 gravel (dry) Note depth to bottom of creek 18.5 from ground surface to 9.0' 21.7 6.5 5 7.2 6.2 6 Moderate resistance. 2.3 2.3 1.1 8.0 8 Collected BH-05-09 8.0-8.5 at 0.5 HSſ LOGS.GPJ Dark brown fine to medium grained SAND, some clay and silt 8 11:25. 1.5 (moist) Strong odor. 9 10.7 9.1 Light to dark gray silty CLAY, some silt and subangular gravel (wet) 10 8.2 Collected BH-05-09_10.0-10.5 at 11:40. ∇ 6.3 Saturated soils at 10.75' bgs. 0 0 12 0 Light to moderate resistance. 0 Light brown gravelly CLAY, some silt, trace of fine sand (wet) 13 0 9 14 0 0 15 0 0 Dark brown weathered SANDSTONE 16 ft Refusal at 16.0' bgs. Q:\DATA4\2568401\DATA FROM 17 18 19



Log of Boring BH-05-10 Sheet of 1 1 Project No. East Beazer/INDSPEC Properties 2568412 1426082.12 Location Elevation and Datum North 1170.93 NAVD 1988 620141.61 Petrolia, Pennsylvania Drilling Agency Date Started Date Finished 8/9/05 8/9/05 **Bassett Environmental Drilling Equipment** Completion Depth Rock Depth Track Mounted Geoprobe 6620 16.5 ft 16 ft Size and Type of Bit Disturbed Undisturbed Core Number of Samples 2" OD, 60" Macrocore 3 N/A N/A Casing Diameter (in) Casing Depth (ft) Completion 24 HR. First Water Level (ft.) N/A N/A 10 N/A N/A Drop (in) N/A Drilling Foreman Casing Hammer Weight (lbs) N/A N/A **Greg Landis** Sampler 1.5" ID, 60" Macrocore Inspecting Engineer Drop (in) Auto Weight (lbs) Sampler Hammer Auto Dennis Webster Sample Data MATERIAL SYMBOL Remarks Depth PID Number Penetr. resist BL/6in Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Type LANGAN.GD Scale Reading (ppm) Heavy to moderate resistance. Asphalt, mixed amounts of sand, gravel, brick and concrete 0 0 Light brown silty CLAY, some subangular gravels, trace of fine sand 1.1 2 (dry) 0.5 2.2 3 3.1 Light to moderate resistance. 0.5 PUSH 2 1.8 5.9 5 6 Light to dark gray gravelly CLAY, some fine to medium grained sand Collected BH-05-10_7.25-7.75 at 11:55. 8 Moderate resistance. Dark black soil staining, smearing, trace of odor. 84 9 10 Saturated soils encountered at 10.0' bgs. Light to dark gray gravelly CLAY, some silt, trace of fine sand (wet) Collected BH-05-10_11.0-11.5 at 12:05. 12 Moderate resistance. 13 9 15 16 Heavy resistance. Dark reddish brown sandstone Q:\DATA4\2568401\DATA FROM Refusal at 16.5' bgs. End of Boring @ 16.5 ft 17 18 19



Log of Boring BH-05-11 Sheet of 1 1 Project No. East Project Beazer/INDSPEC Properties 2568412 1426092.32 Location Elevation and Datum North 1172.17 NAVD 1988 620572.68 Petrolia, Pennsylvania Drilling Agency Date Started Date Finished 8/8/05 8/8/05 Langan Engineering and Environmental Drilling Equipment Completion Depth Rock Depth Hand Auger 2 ft N/A Size and Type of Bit Disturbed Undisturbed Core Number of Samples 3.25", 12" Long Stainless Steel 2 N/A N/A Casing Diameter (in) Casing Depth (ft) Completion 24 HR. First Water Level (ft.) N/A N/A N/A N/A \mathbf{V} N/A Drop (in) N/A Drilling Foreman Casing Hammer Weight (lbs) N/A N/A N/A Sampler Stainless Steel Hand Auger Inspecting Engineer Drop (in) N/A Weight (lbs) Sampler Hammer N/A Dennis Webster Sample Data MATERIAL SYMBOL Remarks Depth PID Number Penetr. resist BL/6in Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Type **Template LANGAN.GDT** Scale Reading (ppm) Light brown silty SAND, mixed amounts of coarse rounded sand and 0 *HA 7 gravel (dry) 0 8.7 Collected BH-05-11_1.0-1.5 at *HA 9 N 11:30. Dark reddish brown silty CLAY (moist) 22 0 Hand auger refusal at 2.0' bgs. End of Boring @ 2 ft Q:/DATA4/2568401/DATA FROM PHILLY/OFFICE DATA/GINT LOGS/INDSPEC BORING LOGS.GPJ ... 11/2/2009 3:02:35 PM ... Report Log - LANGAN 3 4 5 6 8 9 10 12 13 14 15 16 17 18 19



Log of Boring BH-05-12 Sheet of 1 1 Project No. East Project Beazer/INDSPEC Properties 2568412 1426087.92 Location Elevation and Datum North 1171.6 NAVD 1988 620582.96 Petrolia, Pennsylvania Drilling Agency Date Started Date Finished 8/8/05 8/8/05 Langan Engineering and Environmental Drilling Equipment Completion Depth Rock Depth Hand Auger 2 ft N/A Size and Type of Bit Disturbed Undisturbed Core Number of Samples 3.25", 12" Long Stainless Steel 2 N/A N/A Casing Diameter (in) Casing Depth (ft) Completion 24 HR. First Water Level (ft.) N/A N/A N/A N/A N/A Drop (in) N/A Drilling Foreman Casing Hammer Weight (lbs) N/A N/A N/A Sampler Stainless Steel Hand Auger Inspecting Engineer Drop (in) N/A Weight (lbs) Sampler Hammer N/A Dennis Webster Sample Data MATERIAL SYMBOL Remarks Depth PID Number Penetr. resist BL/6in Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Type Template LANGAN.GDT Scale (ppm) Dark to light gray coarse subrounded to rounded GRAVEL (dry) 0 *HA ω 0 Medium brown silty SAND, some clay, some mixed sands and gravel 0 Collected BH-05-12_1.0-1.5 at *HA 7 N 11:50. 0 0 Terminated Hand Auger at 2.0' End of Boring @ 2 ft Q:/DATA4/2568401/DATA FROM PHILLY/OFFICE DATA/GINT LOGS\INDSPEC BORING LOGS.GPJ ... 11/2/2009 3:02:38 PM ... Report: Log - LANGAN . 3 5 6 8 9 10 12 13 15 16 18 19



Log of Boring BH-05-13 Sheet of 1 1 Project No. East Project Beazer/INDSPEC Properties 2568412 1426087.98 Location Elevation and Datum North 1169.6 NAVD 1988 620597.6 Petrolia, Pennsylvania Drilling Agency Date Started Date Finished 8/8/05 8/8/05 Langan Engineering and Environmental **Drilling Equipment** Completion Depth Rock Depth Hand Auger 2 ft N/A Size and Type of Bit Disturbed Undisturbed Core Number of Samples 3.25", 12" Long Stainless Steel 2 N/A N/A Casing Diameter (in) Casing Depth (ft) Completion 24 HR. First Water Level (ft.) N/A N/A N/A N/A \mathbf{V} N/A Drop (in) N/A Drilling Foreman Casing Hammer Weight (lbs) N/A N/A N/A Sampler Stainless Steel Hand Auger Inspecting Engineer Drop (in) N/A Weight (lbs) Sampler Hammer N/A Dennis Webster Sample Data MATERIAL SYMBOL Remarks Depth PID Number Penetr. resist BL/6in Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Type LANGAN.GDT Scale Reading (ppm) Dark to ligh tgray coarse subrounded to rounded GRAVEL (dry) 10.8 0 Collected BH-05-13_0.5-1.5 at Dark brown silty SAND, some clay, some coarse subrounded gravel 0 12:00. (dry) 0 *HA 7 N 0 0 Refusal encountered at 2.0' End of Boring @ 2 ft Q:/DATA4/2568401/DATA FROM PHILLY/OFFICE DATA/GINT LOGS/INDSPEC BORING LOGS.GPJ ... 11/2/2009 3:02:41 PM ... Report: Log - LANGAN . 3 5 6 8 9 10 12 13 15 16 18 19



Log of Boring BH-05-14 Sheet of 1 1 Project No. East Project Beazer/INDSPEC Properties 2568412 1426104.27 Location Elevation and Datum North 1169.32 NAVD 1988 620618.26 Petrolia, Pennsylvania Drilling Agency Date Started Date Finished 8/8/05 8/8/05 Langan Engineering and Environmental Drilling Equipment Completion Depth Rock Depth Hand Auger 1.5 ft N/A Size and Type of Bit Disturbed Undisturbed Core Number of Samples 3.25", 12" Long Stainless Steel 2 N/A N/A Casing Diameter (in) Casing Depth (ft) Completion 24 HR. First Water Level (ft.) N/A N/A N/A N/A \mathbf{V} N/A Drop (in) N/A Drilling Foreman Casing Hammer Weight (lbs) N/A N/A N/A Sampler Stainless Steel Hand Auger Inspecting Engineer Drop (in) N/A Weight (lbs) Sampler Hammer N/A Dennis Webster Sample Data MATERIAL SYMBOL Remarks Depth PID Number Penetr. resist BL/6in Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Type Q:DATA42568401/DATA FROM PHILLY/OFFICE DATA/GINT LOGS\INDSPEC BORING LOGS.GPJ ... 11/2/2009 3:02:44 PM ... Report. Log - LANGAN ...Template LANGAN. GDT Scale Reading (ppm) Dark gray/black coarse subrounded to round GRAVEL (dry) 10.8 *HA Collected BH-05-14_0.5-1.0 at 0 1 12:20. 0 Dark to light brown silty SAND, some coarse gravel, tracec of clay Refusal encountered at 1.5' 0 End of Boring @ 1.5 ft 2 3 5 6 8 9 10 12 13 14 15 16 17 18 19



Log of Boring BH-05-15 Sheet of 2 1 Project No. East 1425927.74 Beazer/INDSPEC Properties 2568412 Location Elevation and Datum North 1166.71 NAVD 1988 Petrolia, Pennsylvania 619770.33 Drilling Agency Date Started Date Finished 8/10/05 **Bassett Environmental** 8/10/05 **Drilling Equipment** Completion Depth Rock Depth Track Mounted Geoprobe 6620 20 ft 19.7 ft Size and Type of Bit Disturbed Undisturbed Core Number of Samples 2" OD, 60" Macrocore N/A N/A Casing Diameter (in) Casing Depth (ft) Completion 24 HR. First Water Level (ft.) N/A N/A 1.5 1.8 Drop (in) N/A Drilling Foreman Casing Hammer Weight (lbs) N/A N/A **Greg Landis** Sampler 1.5" ID, 60" Macrocore Inspecting Engineer Drop (in) A<u>uto</u> Weight (lbs) Sampler Hammer Auto Dennis Webster Sample Data MATERIAL SYMBOL Remarks Depth PID Number Penetr. resist BL/6in Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Type LANGAN.GD Scale Reading (ppm) Heavy resistance. Asphalt, concrete, mixed amounts of subangular/subrounded gravel (dry) 0 0 Dark black gravelly SAND, some silt, trace of clay (dry) Moderate resistance. O 0 0 3 0 30 0 Light brown to reddish orange firm CLAY, trace of fine sand and n subangular gravel (wet) 0 5 0 Moderate to light resistance. 0 6 0 0 Dark gray silty CLAY, trace of fine sand and subangular gravel (wet) 0 0 8 0 PUSH 8 0 Collected BH-05-15_8.75-9-25 9 0 0 Soils saturated at 8.75' bgs. 10 0 0 Light brown to reddish orange CLAY, some silt (wet) 0 Set 2" well to 20' bgs. 0 Moderate resistance. 12 0 Collected BH-05-15-12.0-12.5 0 at 9:45 13 Light brown gravelly CLAY (wet) O 9 14 0 0 15 0 Light brown to dark gray gravelly CLAY, some silt and fine sand 16 0 17 9 18 0 0 19 0 0



Log of Boring BH-05-15 Sheet 2 of 2 Project Project No. East 1425927.74 Beazer/INDSPEC Properties 2568412 Location Elevation and Datum North Petrolia, Pennsylvania 1166.71 NAVD 1988 619770.33 Sample Data MATERIAL SYMBOL Remarks Depth Scale PID Reading (ppm) Recov. (in)
Penetr. resist
BL/6in Number Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) 20 Reddish brown weathered SANDS TONE SHALE 0 PUSH 9 21 22 23 24 Q:DATA42568401/DATA FROM PHILLY/OFFICE DATA/GINT LOGS\INDSPEC BORING LOGS.GPJ ... 11/2/2009 3:02:50 PM ... Report. Log - LANGAN ...Template LANGAN.GDT 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 42 43



Log of Boring BH-05-16 Sheet of 1 1 Project No. East Beazer/INDSPEC Properties 2568412 1426004.32 Location Elevation and Datum North 1167.08 NAVD 1988 Petrolia, Pennsylvania 619928.38 Drilling Agency Date Started Date Finished 8/10/05 8/10/05 **Bassett Environmental Drilling Equipment** Completion Depth Rock Depth Track Mounted Geoprobe 6620 15 ft 14.5 ft Size and Type of Bit Disturbed Undisturbed Core Number of Samples 2" OD, 60" Macrocore 3 N/A N/A Casing Diameter (in) Casing Depth (ft) Completion 24 HR. First Water Level (ft.) N/A N/A 2.9 3 Drop (in) N/A Drilling Foreman Casing Hammer Weight (lbs) N/A N/A **Greg Landis** Sampler 1.5" ID, 60" Macrocore Inspecting Engineer Drop (in) Auto Weight (lbs) Sampler Hammer Auto Dennis Webster Sample Data MATERIAL SYMBOL Remarks Depth PID Number Penetr. resist BL/6in Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Type Template LANGAN.GD Scale Reading (ppm) Gray/black SAND and GRAVEL (dry) Moderate to light resistance. 0 $\langle \cdot \rangle$ 0 Light borwn medium to coarse grained gravelly SAND, some silt, 0 trace of bricks/asphalt 2 0 Log - LANGAN .. 151 Id 24 Little to no resistance. 0 3 0 0 n Black gravelly CLAY, some silt (moist) 2.1 5 32 Collected BH-05-16_5.25-5.75 Black silty CLAY, some subangular/subrounded gravel (wet) 0 at 12:15. 6 Little resistance. Soils saturated at 7.01' bgs. 1.1 54 0 Black to gray gravelly CLAY (wet) 8 0 Light to moderate resistance. 0 9 0 Collected BH-05-16_9.75-10.25 ar Dark gray firm CLAY, some silt, trace of sand and gravel (wet) 0 12:20. 12 n 54 13 0 Dark gray gravelly CLAY (wet) 14 0 Q:\DATA4\2568401\DATA FROM PHILLY\OFFICE Reddish brown weathered SANDSTONE/SHALE 0 Set 2" monitoring well to 15' End of Boring @ 15 ft bgs. 16 17 18 19



BH-05-17 Sheet Log of Boring of 1 1 Project No. East Project Beazer/INDSPEC Properties 2568412 1426004.32 Location Elevation and Datum North 1163.07 NAVD 1988 Petrolia, Pennsylvania 619928.38 Date Started **Drilling Agency** Date Finished 8/10/05 8/10/05 **Bassett Envorinmental Drilling Equipment** Completion Depth Rock Depth Track Mounted Geoprobe 6620 14.5 ft 14.5 ft Size and Type of Bit Disturbed Undisturbed Core Number of Samples 2" OD. 60" Macrocore 3 N/A N/A Casing Diameter (in) Casing Depth (ft) Completion 24 HR. First Water Level (ft.) N/A 7.2 3.1 N/A Drop (in) N/A Drilling Foreman Casing Hammer Weight (lbs) N/A N/A **Greg Landis** Sampler 1.5" ID, 60" Macrocore Inspecting Engineer Drop (in) Auto Weight (lbs) Sampler Hammer Auto Dennis Webster Sample Data MATERIAL SYMBOL Remarks Depth PID Number Penetr. resist BL/6in Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Type -ANGAN.GD Scale Reading (ppm) Asphalt, subangular gravel (dry) 0 Moderate to heavy resistance. Light gray fine to medium grained gravelly SAND, some silt, trace of 1.2 thin clay bands (dry) Light to moderate resistance. 27 2 0 PUSH 24 0 3 3.5 22.1 Collected BH-05-17_5.0-5.5 at Black SAND and GRAVEL, some silt, some clay (moist) 15:20. 37.3 Strong odor and a black soil 42.1 discoloration from 5.0' to 11.5' 5 67.2 bgs. 42.2 6 48 18 20 Light gray gravelly SAND, some silt and clay (wet) PUSH Soils saturated at 7.25' bgs. 36 19 8 22 30 9 13 52 Light gray and black gravelly CLAY, some silt, trace of sand (wet) 50 Collected BH-05-17 10.5-11.0 10 Q:\DATA4\2568401\DATA FROM PHILLY\OFFICE DATA\GINT LOGS\INDSPEC at 15:45. Black gravelly SAND, some clay and silt (wet) Constructed 2" well to 14.5' 0 12 bgs. 52 0 က 0 13 O 0 14 0 Brown to reddist how by by by by ft 15 16 17 18 19

20



BH-05-18 Sheet Log of Boring of 1 1 Project No. East Project 1425996.11 Beazer/INDSPEC Properties 2568412 Location Elevation and Datum North Petrolia, Pennsylvania 1165.25 NAVD 1988 620248.39 Date Started **Drilling Agency** Date Finished 8/10/05 8/10/05 **Bassett Environmental Drilling Equipment** Completion Depth Rock Depth Track Mounted Geoprobe 6620 15 ft 15 ft Size and Type of Bit Disturbed Undisturbed Core Number of Samples 2" OD. 60" Macrocore 3 N/A N/A Casing Diameter (in) Casing Depth (ft) Completion 24 HR. First Water Level (ft.) N/A N/A 9.2 4.2 Drop (in) N/A Drilling Foreman Casing Hammer Weight (lbs) N/A N/A **Greg Landis** Sampler 1.5" ID, 60" Macrocore Inspecting Engineer Drop (in) A<u>uto</u> Weight (lbs) Sampler Hammer Auto Dennis Webster Sample Data MATERIAL SYMBOL Remarks Depth PID Number Penetr. resist BL/6in Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Type ANGAN.GD Scale Reading (ppm) Asphalt, miscellaneous fill (concrete, bricks) 0 2.1 Heavy to moderate resistance. 1.1 Light brown gravelly CLAY, some silt, trace of fine sand (dry) 9 2 3.2 HSI Id 48 Light resistance. 7.9 3 Black silty CLAY, some subangular gravel, trace of fine sands 10.1 (moist) 10 Moderate to light resistance. 19 Strong odor and black staining 22 from 4.25' to 13.5' bgs. 5 37 Collected BH-05-18_4.5-5.0 at 40 8:40. Light gray firm CLAY, some silt, mixed amounts of fine to coarse 6 32 subangular to round gravel (moist) 30 17.1 84 18.9 8 29.2 BORING LOGS.GP. 29.1 Light gray to black gravelly SAND, some clay and silt (wet) 9 1.1 Soils saturated at 9.25' bgs. 0.9 Moderate resistance. 1.2 Black gravelly CLAY, some silt (wet) 38.1 Set a 2" well to 15.0' bgs. 12 Collected BH-05-18_12.0-12.5 9 at 8:55. 13 14 Q:\DATA4\2568401\DATA FROM PHILLY\OFFICE Reddish brown SANDSTONE fragments End of Boring @ 15 ft 16 17 18 19



BH-06-01 Sheet Log of Boring of 1 1 Project No. East Project Beazer/INDSPEC Properties 2568412 1426016.77 Location Elevation and Datum North Petrolia, Pennsylvania 1165 NAVD 1988 620195.51 Drilling Agency Date Started Date Finished 2/22/06 Pennsylvania Drilling 2/23/06 **Drilling Equipment** Rock Depth Completion Depth Electric Drill/Hand Tools 10.5 ft 10 ft Size and Type of Bit Disturbed Undisturbed Core Number of Samples 3" OD Core Bit/2" OD. 1 3/4" OD Split Spoon 4 N/A N/A Casing Diameter (in) Casing Depth (ft) Completion 24 HR. First Water Level (ft.) 1.6 1.2 ∇ 1.4 N/A N/A Drop (in) N/A Casing Hammer Weight (lbs) Drilling Foreman N/A N/A Jim Lang Sampler 2" OD/1 3/4" OD x 2' Split Spoon Inspecting Engineer Drop (in) 20" Sampler Hammer Weight (lbs) Manual/Donut 70 lbs Dennis Webster Sample Data MATERIAL SYMBOL Remarks Depth PID Number Penetr. resist BL/6in Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Type LANGAN.GD Scale (ppm) 13:45 Started coring. CONCRETE (w/ 1" steel rebar, m-c aggregate) 0 0 15:30 Completed coring. 16:20 Started advancing split Dark brown f subangular GRAVEL, some f-m sand, trace silt (wet) 4.7 spoons by hand. CONCRETE (m-c aggregate) Sub floor from 1.25' to 2.0' 0 bgs. 2 0 Black subangular f-c GRAVEL, some f-m sand, trace silt (wet) SS Black staining and a strong 39 9 odor. 4.3 25 Tan BRICK, some black f-m subangular gravel (wet) Stopped work every 45 3 minutes for half an hour due to 42 Black f gravelly CLAY, highly mottled, trace silt (moist) mixing of dissolvers. 6.9 Collected BH-06-01_3.5-4.0 at 20 27 N 10:00. Light gray/brown CLAY, some silt, trace f-m subangular gravel 50/2 Reemed hole down to 5.0' bgs 12.2 (moist) with a 3" core bit. 5 Light reddish brown sheen Dark brown/tan silty CLAY, some f sand, trace f-c sandstone observed from 3.25' to 5.0' 2.7 fragments (wet) Slight odor, black staining, pits, 6 3.7 voids, densely compacted Black f-m silty SAND, some light brown/black interbedded f-c 5.25-6.25' bgs. sandstone fragments (dry) 30.2 SS 7 10 က 7 Light gray/tan silty CLAY, some f sand, trace f-c sandstone 55/2 311 fragments (wet) 22.1 8 21.1 Dark gray/black clayey SAND, some light brown/black interbedded 16.1 SS 8 f-c sandstone fragments (dry) 9 11 20 4 Q:\DATA4\2568401\DATA FROM PHILLY\OFFICE DATA\GINT 28.2 18 10 Light brown/gray SANDSTONE, low hardness, weak strength, f-c 0 Weathered sanstone 52 grained, clay lenses, iron staining, deep weathering, micaceous (dry) fragments at 10.0' bgs 0 Split spoon refusal at 10.5' End of Boring @ 10.5 ft bgs. 11 12 13

15



BH-06-02 Log of Boring Sheet of 1 1 Project No. East Project Beazer/INDSPEC Properties 2568412 1425999.37 Location Elevation and Datum North Petrolia, Pennsylvania 1165.88 NAVD 1988 620191.37 Drilling Agency Date Started Date Finished 2/21/06 Pennsylvania Drilling 2/22/06 Rock Depth **Drilling Equipment** Completion Depth Electric Drill/Hand Tools 10.5 ft 10.2 ft Size and Type of Bit Disturbed Undisturbed Core Number of Samples 3" OD Core Bit/2" OD. 1 3/4" OD Split Spoon 6 N/A N/A Casing Diameter (in) Casing Depth (ft) Completion 24 HR. First Water Level (ft.) 3.7 2.3 N/A N/A 1.4 Drop (in) N/A Casing Hammer Weight (lbs) Drilling Foreman N/A N/A Jim Lang Sampler 2" OD/1 3/4" OD x 2' Split Spoon Inspecting Engineer Drop (in) 20" Sampler Hammer Weight (lbs) Manual/Donut 70 lbs Dennis Webster Sample Data MATERIAL SYMBOL Remarks Depth Number Penetr. resist BL/6in Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Type LANGAN.GD Scale Reading (ppm) 9:40 Started coring. CONCRETE (m-c aggregate) 9:40 Stopped coring because of plant proccessing. 9:45 Completed coring and Dark brown f-c subangular GRAVEL, some light brown silt, trace SS 50/1 0 concrete is 11" thick. concrete fragments (wet) Spoons were driven by hand CONCRETE (m-c aggregate) 0 11 with a 70 lb. hammer. Black subangular f-c GRAVEL, some f sand, trace silt, trace red 2 Refusal after 1". 0 0 brick and concrete (wet) 4 α 20 Switch to core drill; concrete 12" to 18" (sub floor). 0 Light brown silty CLAY, trace f-c subangular gravel (wet) 13 Split spooned from 1.5' to 3.0' 3 Dark gray/black f gravelly CLAY, some silt, trace f sand (wet) 0 bgs. 32 Black staining and strong odor ∇ from 3.0' to 5.0' bgs. 27 SS ∞ Slight odor and black staining. က 5.4 70 Standing water in split spoon 7.2 at 3.75' bgs. 30 Strong odor and slight sheen 5 Light brown f SAND, some clay, trace f-m sandstone fragments 8.9 from 3.0-4.75' bgs. (moist) Cored from 5.0' to 5.5' bgs. 10.1 10 6 Black staining and strong odor Black silty CLAY, some f sand (dry) 8.3 7 22 from 6.0' to 10.0' bgs. Light gray/tan silty CLAY, some f-m sand (dry) 9.2 11 Split spoon from 5.5' to 7.0' 7 0 bgs with a 1 3/4" OD spoon. Light brown silty CLAY, some f sand, trace f-c subangular gravels 5 (wet) 0 12 24 8 LO Split spoon from 7.0' to 9.0' 0 8 bgs with a 1 3/4" OD spoon. 0 10 9 Stopped drilling on 2/21/2006 Dark gray/black clayey SAND, some weathered f-m sandstone 4.2 8 at 17:00. fragments, trace silt (wet) Q:\DATA4\2568401\DATA FROM PHILLY\OFFICE DATA\GINT SS 5.8 Started drilling at 8:00 on ဖ 20 13 2/22/2006 10 n Advanced 2" casing to 9.0' bgs 63 Dark brown/grav SANDSTONE, soft, weak strength, f-m grained. and reemed out drill hole mica flakes (dry)End of Boring @ 10.5 ft Split spoon refusal 11 encountered at 10.5' bgs at 10:15. 12 13



BH-06-03A Sheet Log of Boring of 1 1 Project No. East Project Beazer/INDSPEC Properties 2568412 1426015.63 Location Elevation and Datum North Petrolia, Pennsylvania 1165.75 NAVD 1988 620010 Drilling Agency Date Started Date Finished 2/23/06 Pennsylvania Drilling 2/27/06 **Drilling Equipment** Rock Depth Completion Depth Electric Drill/Hand Tools 4.5 ft N/A Size and Type of Bit Disturbed Undisturbed Core Number of Samples 3" OD Core Bit/2" OD, 1 3/4" OD Split Spoon 2 N/A N/A Casing Diameter (in) Casing Depth (ft) Completion 24 HR. First Water Level (ft.) N/A N/A $\sqrt{}$ N/A N/A N/A Drop (in) N/A Casing Hammer Weight (lbs) Drilling Foreman N/A N/A Jim Lang Sampler 2" OD/1 3/4" OD x 2' Split Spoon Inspecting Engineer Drop (in) 2<u>0"</u> Weight (lbs) Sampler Hammer Manual/Donut 70 lbs Dennis Webster Sample Data MATERIAL SYMBOL Remarks Depth Number Penetr. resist BL/6in Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Type LANGAN.GD Scale (ppm) P 5 4 Started coring at 16:00 on Concrete (large aggregate) 2/23/2006. 0 Started advaning split spoons Dark brown/black f-m SAND, some f-c subangular-subrounded by hand at 0.5' bgs @ 1625. gravels, trace red brick (wet) 0 Split spoon started kicking away towards No. 1 Building 7 0 due to the retaining wall. Dark brown/gray silty CLAY, some c subrounded gravel, trace 2 0 Width of retaining wall is 1.7'. cobbles (wet) 16 0 SS 4 Dark gray/brown f gravelly CLAY, some f-m grained sand, trace silt 3 0 Black staining 3.25-4.5' bgs. 5 20 Black silty CLAY, some f-c subrounded gravel, trace f sand α 0 Strong odor. 5 w/subrounded cobbles (wet) Q:DATA4\2568401\DATA FROM PHILLY\OFFICE DATA\GINT LOGS\\\NDSPEC BORING LOGS.GPJ ... 11/2/2009 3:03:16 PM Stopped split spooning at 0 Started reeming hole on End of Boring @ 4.5 ft 2/24/2006 at 8:00 with 3" OD 5 core bit. Top of wall to stream bed = 6 On 2/27/2006 tried to continue advancing split spoons but encountered refusal due to concrete. 7 Had to relocate hole 2' west towards the No. 1 building due to concrete from retaining wall. 8 9 10 12 13



BH-06-03B Sheet Log of Boring of 1 1 Project No. East Project Beazer/INDSPEC Properties 2568412 1426014.34 Location Elevation and Datum North Petrolia, Pennsylvania 1165.75 NAVD 1988 620011.07 Drilling Agency Date Started Date Finished 2/24/06 Pennsylvania Drilling 2/27/06 **Drilling Equipment** Completion Depth Rock Depth Electric Drill/Hand Tools 12.2 ft 11.5 ft Size and Type of Bit Disturbed Undisturbed Core Number of Samples 3" OD Core Bit/2" OD. 1 3/4" OD Split Spoon 3 N/A N/A Casing Diameter (in) Casing Depth (ft) Completion 24 HR. First Water Level (ft.) 6.8 7.4 $\sqrt{}$ N/A N/A Drop (in) N/A Casing Hammer Weight (lbs) Drilling Foreman N/A N/A Jim Lang Sampler 2" OD/1 3/4" OD x 2' Split Spoon Inspecting Engineer Drop (in) 20<u>"</u> Sampler Hammer Weight (lbs) Manual/Donut 70 lbs Dennis Webster Sample Data MATERIAL SYMBOL Remarks Depth Number Penetr. resist BL/6in Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Type late LANGAN.GDT Scale (ppm) On 2/24/2006 started coring at CONCRETE (m-c aggregate) 0800. Boring located 4.0' west of retaining wall. 2 Break in concrete at 2.7' bgs. Brown/black f-c subangular GRAVEL, some f-m sand (dry) 3 Top of 36" sewer at 2.9' bgs. CONCRETE (f-m aggregate) $\sqrt{}$ Light reddish brown staining from 3.0' to 4.5' bgs. with a slight odor. 5 CONCRETE (mix of m-c aggregate) 6 BORING LOGS.GPJ Bottom of 36" sewer at 6.8' Black f-m grained SAND, some silt w/ f-c subrounded gravel, trace 1.5 2.2 16 mica flakes (wet) Started advancing split spoon 14 3.3 by hand at 6.8' bgs. 9 8 Black staining and an odor 5 Black clayey SAND, some silt w/ f-c subrounded gravel (wet) 0 from 6.8' to 11.0' bgs. 7 2" casing advanced to 10.0' 0 bgs. 9 16 0 Dark gray CLAY, some f-m grained sand, trace sandstone fragments (dry) 14 0 24 Black staining, slight odor, and 10 5 0 clay smears easily. Stopped split spooning on 7 0 10/24/2006 at 14:00. Q:\DATA4\2568401\DATA FROM PHILLY\OFFICE Continued split spooning on 10 0 Black f-m grained SAND, some clay, trace sandstone fragments 8 10/27/2006 at 8:00. က Encountered weathered 0 Dark brown to gray SANDSTONE, friable, weak strength, f-m 30/1 sandstone fragments at 11.5' grained, light brown interbedded sands, weathered, mica flakes (dry) 12 End of Boring @ 12.2 ft Split spoon refusal @ 12.2'. -Completed on 2/27/06 @ 9:00. 13

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BH-06-04 Sheet Log of Boring of 1 1 Project No. East Project Beazer/INDSPEC Properties 2568412 1426013.95 Location Elevation and Datum North Petrolia, Pennsylvania 1165.67 NAVD 1988 620049.93 Drilling Agency Date Started Date Finished 2/27/06 Pennsylvania Drilling 2/27/06 **Drilling Equipment** Completion Depth Rock Depth Electric Drill/Hand Tools 12 ft 11 ft Size and Type of Bit Disturbed Undisturbed Core Number of Samples 3" OD Core Bit/2" OD. 1 3/4" OD Split Spoon 6 N/A N/A Casing Diameter (in) Casing Depth (ft) Completion 24 HR. First Water Level (ft.) 3.1 2.9 ∇ 3.8 N/A N/A Drop (in) N/A Casing Hammer Weight (lbs) Drilling Foreman N/A N/A Jim Lang Sampler 2" OD/1 3/4" OD x 2' Split Spoon Inspecting Engineer Drop (in) 20" Sampler Hammer Weight (lbs) Manual/Donut 70 lbs Dennis Webster Sample Data MATERIAL SYMBOL Remarks Depth Number Penetr. resist BL/6in Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Type Femplate LANGAN.GD Scale (ppm) Started coring at 10:30. CONCRETE (c aggregate) Started split spooning at 10:40 Dark brown m-c grained SAND, some clay, some subrounded 0 5 gravel, trace red/tan brick (moist) at 0.7' bgs. 5 Dark reddish brown to black 0 4 staining from 1.0 to 4.7' bgs. 5 2 0 Length from top of wall to 0 Dark brown/black subangular f gravelly CLAY, some m-c grained bottom of stream is 4.8'. 5 3 sand, trace silt, cobbles and concrete (wet) 1.7 Strong odor. 20 SS 7 $\sqrt{}$ α Set 2" casing to 5.0' bgs. 38 10 1 Strong odor. 16 12.2 CONCRETE with c subrounded to rounded gravel Refusal due to concrete from 50/2 5 14.1 4.8' to 6.0' bgs. Cored from 4.8' to 6.0' bgs. 6 Concrete footer from 4.8' to 14.9 Black f-m grained SAND, some subrounded gravel w/clay, trace -OGS\INDSPEC BORING LOGS.GPJ 9 6.0' bgs. sandstone fragments (wet) Black staining and strong odor 14 7 from 6.0' to 9.5' bgs. 7 4 105.3 Collected BH-06-04 6.5-7.0 at 19 13:26 70.6 18 8 27.8 5 Set 2" casing to 10.0' bgs. 13.2 15 Dark gray/brown clayey SAND, some silt, trace sandstone 5 2 9 34.9 fragments, mica (moist) 27 18.2 24 10 14 3.9 Q:\DATA4\2568401\DATA FROM PHILLY\OFFICE I 9 4 20 Encountered weathered Dark brown/gray SANDSTONE, friable, weak, f-m grained, 1.1 15 sandstone fragments at 11.0' brown/tan interbedded sands, deep weathering, highly fractured, 50/2 mica flakes (dry) Refusal encountered at 12.0 End of Boring @ 12 ft at 14:30. 13



	ENC	GINEERING & ENVIRON	VMENTAL SERVICE	:S	Log	of B	Boring	_	ı	BH-	06-05	.		Sheet	1	of	1
Project						Pro	oject No	D.							East		
Location		Beazer/INDSPEC	Properties			Ele	vation	and E	Datur		8412				North		26013.44
		Petrolia, Pennsylv	ania							116	65.66 N	NAVD				6	20067.22
Drilling Ag	gency	Pennsylvania Drill	lina			Da	te Start	ed		,	2/27/06		Date	Finished	,	2/28/06	
Drilling Ed	quipment		ıı ıg			Со	mpletic	n De	pth		121100	'	Roc	k Depth		./20/00	
Size and	Tuno of F	Electric Drill/Hand	Tools							Die	13 ft turbed	t	L.,	Indisturbed		11.5 ft Core	
	•	3" OD Core Bit/2"	OD, 1 3/4" OD S	Split Spoo	on	Nu	mber o	f San	nples	DIS	urbea	7		N	I/A		N/A
Casing Di	iameter (in) N/A		C	asing Depth (ft) N/A	Wa	ater Lev	el (ft	.)	Firs		4	- 1	completion	3.4	24 HR.	3.5
Casing Ha	ammer	N/A	Weight (lbs)	N/A	Drop (in) N/A	Dri	lling Fo	rema	an					- <u>-</u>			
Sampler		2" OD/1 3/4" OD >	x 2' Split Spoon			Ins	pecting	ı Ena		Jim La	ang						
Sampler H	Hammer	Manual/Donut	Weight (lbs)	70 lbs	Drop (in) 20"			, 3		Denni	s Webs						
SOL SOL							Depth	, ,	:	1	mple D		ID		Re	marks	
MATERIAL		Sa	ample Descript	tion			Scale		Type	Secov (in)	Penetr. resist BL/6in	Rea (pr	ding	(Drilli Fluid Lo	ng Fluid, ss, Drilli	Depth of ng Resist	Casing, ance, etc.)
	CON	CRETE (m-c aggreg	jate)				<u> </u>		•	-		(FF	,			ng concr	
	Dark	brown silty m-c SAN	JD some clay w	/ c subroi	unded gravel		-	1			_	_		16:45	and co	omplete	d at 17:00.
		wood fragments, red					_ 1 -	4	SS		5					plit spoons	
							-	-	SS	12	6			at 8:0	0 on 2	/28/2006	ô.
							_ 2	-			6			Black	reddis	h brown	staining.
							-	1			14	-		Stron	g odor	from 2.	5' to 5.0'
	Black silty CLAY, some f angular-subrounded gravel, trace wood					_	_ _ 3				14			bgs. Dark	reddish brown sheen 3.0		
	fragments, brick, concrete, and glass (moist)						1	+ ~	SS	12	12			to 4.5	bgs.		
						∇	_ 4	-			12						
		brown/blook f on gula				_	<u>-</u>	1	_	_	5						
		brown/black f angula CRETE (m-c aggreg		avelly CL	-AT (Wel)		_ _ 5		SS	5	8	-		Starte	d corir	ng concr	rete at 5.0'
		(1100 10	,,				_	‡							at 10:00 f foote	0. r at 5.0'	bas.
<i>(7)</i>	Black	f subangular gravel	llv CLAY. some f	-m sand.	trace silt. fabric.		_ _ 6	1			6	_					6.0' bgs.
		n brick, and sandsto			, , , , , , , , , , , , , , , , , , , ,		_	=	SS					Conti	nued s	plit spoo	oning at
							_ _ 7	4	SS	₽	19			10:15 Strong	g odor.		
	Black sands	clayey f-m SAND, stone fragments (we	some f subrounde et)	ed gravel	, trace fabric and		-	=							,		
			<i>'</i> 				- 8	1			16						
	Black	m-c SAND, some c	lay, w/sandstone	e fragmer	nts, trace silt (wet))	-	=	SS								
							- - 9	ر.	SS	18	12				stainin 11.0'		dor from
							_	=			19					-3	
							- - 10	+			12	_					
							_	=	SS		11						
	Dark	gray gravelly CLAY,	some silt trace	candeton	o fragments (wet	\	- - 11	ي إ	SS	3 2 8	5						
								=			6			Enco	ınterer	d weathe	ered
	Light/ black/	dark brown SANDS' tan fine interbedded	TONE, f-m graine d sands, iron stair	ed, micad ning, dee	ceous, dark p weathering,		- - 12	1			9			sands			ts at 11.5'
		fractured (dry)	·	O.	,		-] ~	SS	12	10 50/2			bgs.			
[::)::):							- 13	+			55,2			Split	noon	refusal.	
		End of	Boring @ 13	3 ft			- -	=						Opiit 8	ροσιτί	ciusai.	
							_ 14	4									
							-	=									
1										- 1							



BH-06-06 Sheet Log of Boring of 1 1 Project No. East Project 1426012.04 Beazer/INDSPEC Properties 2568412 Location Elevation and Datum North Petrolia, Pennsylvania 1165.87 NAVD 1988 620092.53 Drilling Agency Date Finished Date Started 3/3/06 Pennsylvania Drilling 3/3/06 **Drilling Equipment** Completion Depth Rock Depth Electric Drill/Hand Tools 7.2 ft 7.2 ft Size and Type of Bit Disturbed Undisturbed Core Number of Samples 3" OD Core Bit/2" OD, 1 3/4" OD Split Spoon 3 N/A N/A Casing Diameter (in) Casing Depth (ft) Completion 24 HR. First Water Level (ft.) N/A 1.6 3.9 $\sqrt{}$ N/A N/A Drop (in) N/A Drilling Foreman Casing Hammer Weight (lbs) N/A N/A Jim Lang Sampler 2" OD/1 3/4" OD x 2' Split Spoon Inspecting Engineer Drop (in) 20<u>"</u> Weight (lbs) Sampler Hammer Manual/Donut 70 lbs Dennis Webster Sample Data MATERIAL SYMBOL Remarks Depth PID Number Penetr. resist BL/6in Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Type LANGAN.GD1 Scale Reading (ppm) Started coring at 8:45. CONCRETE (w/ 1/2" piece of rebar, m-c aggregate) 0 Concrete floor from 0' to 1.2' 0 0 Subangular f-c GRAVEL, some concrete Started advancing split spoons SS Dark brown silty CLAY, some f-c sand, trace f subangular gravel, 2 ∇ Slight reddish brown staining light gray mottling (wet) 2 with odor from 1.4' to 3.0' bgs. 3.9 8 Collected BH-06-06 2.0-2.5 at Dark brown/black f gravelly CLAY, some silt, trace f-c sand and red 6 10:00. brick fragments (wet) 4.0 25 3 CONCRETE (f-m aggregate) 6.2 Started coring with 2" OD bit at 10:30. 21 1/2/2009 3:03:30 PM Started split spooning at NO RECOVERY 0 SS 7 10 N 11:00. 50/1 5 Concrete footer at 5.0 to 6.5' CONCRETE (m-c aggregate) 0 Started coring with 2" OD bit at 11:30. 6 Q:\DATA4\2568401\DATA FROM PHILLY\OFFICE DATA\GINT LOGS\INDSPEC BORING LOGS.GPJ Black clayey f SAND, some f subangular gravel, trace sandstone Started split spooning at fragments (wet) 0 SS က 9 25 0 12:15. 7 50/1 Light brown to gray SANDSTONE Refusal encountered at 7.2' End of Boring @ 7.2 ft bgs. 8 9 10 12 13



BH-06-07 Sheet Log of Boring of 1 1 Project No. East Project Beazer/INDSPEC Properties 2568412 1426012.59 Location Elevation and Datum North Petrolia, Pennsylvania 1165.85 NAVD 1988 620131.97 Drilling Agency Date Started Date Finished 2/28/06 Pennsylvania Drilling 3/1/06 **Drilling Equipment** Completion Depth Rock Depth Electric Drill/Hand Tools 8.6 ft 8.1 ft Size and Type of Bit Disturbed Undisturbed Core Number of Samples 3" OD Core Bit/2" OD. 1 3/4" OD Split Spoon 5 N/A N/A Casing Diameter (in) Casing Depth (ft) Completion 24 HR. First Water Level (ft.) 3.6 N/A N/A Drop (in) N/A Casing Hammer Weight (lbs) Drilling Foreman N/A N/A Jim Lang Sampler 2" OD/1 3/4" OD x 2' Split Spoon Inspecting Engineer Drop (in) 20" Sampler Hammer Weight (lbs) Manual/Donut 70 lbs Dennis Webster Sample Data MATERIAL SYMBOL Remarks Depth Number Penetr. resist BL/6in (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Sample Description Type -ANGAN.GD Scale (ppm) PID not functioning properly. CONCRETE (m-c aggregate) Began coring at 16:20. Hit a steel tie and may be part Gray m-c angular LIMESTONE fragments (wet fill) of the 36" sewer. Shift hole away from the wall 1 0 WOOD fragments (wet) foot Brown gravelly CLAY, some tan cemented sand (wet) Restarted coring at 16:50 (10" 5 SS 2 ∞ of concrete). 10 Started drilling on 3/1/06 at 8:25. 13 Heavy resistance due to 3 Brown m-c sandy CLAY, some c subangular-subrounded gravel gravels at about 10" bgs. 12 Some black staining on the V clay at 2.5' bgs. 12 7 Black staining and slight odor Brown silty CLAY, some m-c sand, trace coal fragments, wood 20 at 4.0' bgs. fibers, and subangular gravels (dry) Started coring at 5.0' bgs. Black silty CLAY, some concrete (dry) 30 Odor at 4.5' bgs. 5 CONCRETE (w/ piece of rebar, m-c aggregate) Reemed out hole with a 3" core bit to 5.7' bgs; installed casing. 6 Brown WOODEN block (wet) Started split spooning at 6.4' Dark brown silty f-m SAND, some f subangular gravel (wet) 34 SS 7 က Odor and black staining. Dark brown/black silty CLAY, some sand, trace gravel (dry) 20 Q:\DATA4\2568401\DATA FROM PHILLY\OFFICE DATA\GINT LOGS\INDSPEC BORING Reemed hole to 7.5' bgs. Brown to tan SANDSTONE fragments, friable, weak strength, f- m SS 10 9 grained, dark brown/tan interbedded fine sands, some iron staining, 30/1 8 weathered, quartz, feldspar, micas (dry) Split spoon refusal; cored to 8.5' bgs. Encountered weathered End of Boring @ 8.6 ft sandstone fragments and 9 refusal 8.6' bgs at 13:50. 10 12 13



L	ENGINEERING & ENVIRO	ONMENTAL SERVICES	L	og of E	3orii	ng		В	H-0	6-08			Sheet	1	of	1	
Project				Pr	oject	t No.								East			
Beazer/INDSPEC Properties Location						on ar	nd Da		256	8412				North		6012.59	
Location	Petrolia, Pennsylvania							ituiii	116	5.79 N	AVD 19	88		North		0147.09	
Drilling A	Drilling Agency							Date Started Date Finished									
Drilling F	Pennsylvania Dril Equipment	lling		Co	omple	etion	Dent	h		3/1/06	R	2nck	Depth		3/2/06		
	Electric Drill/Hand	d Tools			ompi	Ction	Бері			8.9 ft		COOK	Верит		8.5 ft		
Size and	Type of Bit	" OD Split Spaan		Nı	umbe	er of S	Samp	les	Dist	urbed	3	Un	disturbed	λ1/ Λ	Core	NI/A	
Casing D	3" OD Core Bit/2" Diameter (in)	OD Spiil Spoori	Casing Depth (ft)	lotor	Lovo	· ! /# \		Firs		<u> </u>	Co	mpletion	N/A	24 HR.	N/A	
Casing F	N/A	Weight (lbs)	Drop (in)	A		Leve	. ,		∇		1.2	ļ		3	$ar{ar{ar{\Lambda}}}$	3.3	
Sampler	IN/A	N//	A Blop (III) N/	'A	9	, , , , ,	,,,,,		n La	ına							
	2" OD x 2' Split S	Weight (lbs)	Dron (in)	Ins	spect	ting E	ngine										
<u> </u>	Hammer Manual/Donut	70 lb	s Drop (in) 2	0"			1	De		s Webs			1				
MATERIAL SYMBOL	c.	sample Description				epth	Jec	Ф		ı i ı	PID		,,,,,,		marks		
MATE	3	ample Description				cale	Number	Туре	Reco (in)	Penetr. resist BL/6in	Readir (ppm		Fluid Lo	ing Fluid oss, Drill	, Depth of C ing Resistar	asing, ice, etc.)	
P 6 4 P	CONCRETE (w/1" steel r	rebar, m-c aggregate)			F '	0 —									g at 14:32		
P S A P					Ē	-]						bit.	u conre	ete with 3'	OD core	
77/77	Dark brown subangular f	f-m gravelly CLAY, som	ne wood fragmer	ıts, ∑	+	1 -	\vdash	H		5	4.1				spooning	at	
	trace silt (wet)		ŭ	- <u>-</u>	F	-							14:45	Ď.			
					F :	2 -	-	SS	13	6	21.1		Dark	reddisl	h brown s	heen and	
	Light gray to brown sand		ood fragments, t	race	E	-				10	12.3		stron		from 1.0'		
	f-c subangular gravels (w	vet)		Ţ	<u>+</u>	3 -				4			bgs. Agita	tion tes	st from 2.5	5' to 3.0'	
	Black to gray silty CLAY,	, some f-m sand, trace	f subangular gra	vel $\bar{\underline{Y}}$	4	- -				2	22.1		bgs.	stainir	ng and od	or from	
	(wet)				F	, -	1 .	$\mathbb{R}^{\mathbb{N}}$	ω.	4				5.0' b		01 110111	
					E '	4 -	7	SS		10			Insert	ed 2" t	emporary	steel	
	Black f-m SAND and f-c	subangular GRAVEL,	some clay (wet)		ŧ	=				3	0		casin			0.00.	
P & 4 P	CONCRETE (m-c graine	ed)			+	5 –					0				ng concre	te with 2	
					F	-							Top 0	oit at 16 of foote	o:00. er at 5.2' b	gs.	
					-	6 -]						Conc	rete fo	oter from	5.0' to	
p s d p		A) (E)	(0)		_	-							6.8' b	gs.			
	Black f-c subangular GR Black/gray f-m SAND, so		* *		Ļ.	7 -									spooning	on	
	sandstone fragments (we		ulai gravei, irace	•	F	-				18			3/2/20	006 at	8:30.		
					E,	8 —	က	SS	16	27							
//////////////////////////////////////	Black/gray sandy CLAY, (moist)	some silt, trace sandst	tone fragments	_	† '	- -		SS		22							
:/::/::	Light brown/gray, SANDS	STONE, friable, weak	strength, m grain	ed,	Ē					50/3					d weather ragments		
	f-m grained interpedded mica flakes (dry)	and the company of the second	eply weathered,	/	E	9 –							bgs.		ountered		
					_	-								sai end it 9:00.		al 0.9	
					_ 1	10 –											
					-	-											
					- 1	11 -	1										
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					<u> </u> 1	12 –											
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BH-06-09 Sheet Log of Boring of 1 1 Project No. East Project Beazer/INDSPEC Properties 1426014.13 2568412 Location Elevation and Datum North Petrolia, Pennsylvania 1165.72 NAVD 1988 620163.58 Drilling Agency Date Started Date Finished 3/2/06 Pennsylvania Drilling 3/2/06 **Drilling Equipment** Completion Depth Rock Depth Electric Drill/Hand Tools 9 ft 8 ft Size and Type of Bit Disturbed Undisturbed Core Number of Samples 3" OD. 2 1/4" OD Core Bit/2" OD Split Spoon 3 N/A N/A Casing Diameter (in) Casing Depth (ft) Completion 24 HR. First Water Level (ft.) N/A N/A 3.6 N/A Drop (in) N/A Drilling Foreman Casing Hammer Weight (lbs) N/A N/A Jim Lang Sampler 2" OD x 2' Split Spoon Inspecting Engineer Drop (in) 20" Weight (lbs) Sampler Hammer Manual/Donut 70 lbs Dennis Webster Sample Data MATERIAL SYMBOL Remarks Depth Number Penetr. resist BL/6in Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) LANGAN.GD Scale (ppm) Begin coring at 9:45. CONCRETE (m-c aggregate with 1/2" rebar) Begin split spooning at 10:30. Dark reddish brown f gravelly CLAY, some sand, trace silt and 5.2 3 ∇ sandstone fragments (wet) 2 3.2 8 Dark reddish brown staining 2.1 Gray/brown CLAY, some f-c subangular gravel, trace wood 2 fragments (wet) and odor from 2.5' to 4.6' bgs. 3 8.2 20 1.3 11 Dark gray silty CLAY, some f-m sand with f subangular gravel, trace α Collected BH-06-09_4.0-4.5 at 0.9 wood fragments (wet) 10:45. 50/1 0 Brown WOOD fragments and red brick 5 Split spoon refusal at 5.0' bgs CONCRETE (f-m aggregate with 1/2" rebar) (footer). 0 Started coring at 11:00 with 2 1/4" OD core bit. 6 7 Dark gray f-m sandy CLAY, some weathered sandstone fragments, 10.9 Started split spooning at 15 13:20. trace silt, f subangular gravel (wet) 13.7 4 20 က 8 Encountered weathered Q:\DATA4\2568401\DATA FROM PHILLY\OFFICE DATA\GINT LOGS\INDSPEC Light brown to gray SANDSTONE, friable, weak strength, m-c 8.2 20 sandstone fragments at 8.0' grained, dark brown/black f-m interbedded sand with trace clay, iron 50/3 15.1 bgs. staining, severly weathered (dry) Strong odor at 8 5' bas Refusal encountered at 9.0' End of Boring @ 9 ft bgs. 10 12 13



Log of Boring BH-06-10 Sheet of 1 1 Project No. East 1426010.49 Beazer/INDSPEC Properties 2568412 Location Elevation and Datum North 620181.89 Petrolia, Pennsylvania 1165.8 NAVD 1988 Date Started Drilling Agency Date Finished 3/2/06 Pennsylvania Drilling Company 3/2/06 **Drilling Equipment** Completion Depth Rock Depth Electric Drill/Hand Tools 8 ft 7.6 ft Size and Type of Bit Disturbed Undisturbed Core Number of Samples 3" OD, 2 1/4" OD Core Bit/2" OD Split Spoon 2 N/A N/A Casing Diameter (in) Casing Depth (ft) Completion 24 HR. First Water Level (ft.) N/A N/A 1.6 N/A \mathbf{V} 0.1 Drop (in) N/A Weight (lbs) Drilling Foreman Casing Hammer N/A N/A Jim Lang Sampler 2" OD x 2' Split Spoon Inspecting Engineer Drop (in) 20<u>"</u> Weight (lbs) Sampler Hammer Manual/Donut 70 lbs Dennis Webster Sample Data MATERIAL SYMBOL Remarks Depth PID Number Penetr. resist BL/6in Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Type ANGAN.GD Scale (ppm) Started coring at 14:45. CONCRETE (m-c aggregate with 1/2" steel rebar) Started split spooning at Dark brown f subangular gravelly clay, some m-c sand, trace 15:00. sandstone fragments (wet) 0 19 ∞ ∇ 3 2 0 50/2 Split spoon refusal at 2.4' bgs. CONCRETE (f-m aggregate) Started coring at 15:30. 3 Top of 36" sewer at 3.3' bgs. CONCRETE (f aggregate with 1/4" rebar) 0 CONCRETE (m-c aggregate) 5 0 6 Q:/DATA4/2568401/DATA FROM PHILLY/OFFICE DATA/GINT LOGS\INDSPEC BORING LOGS CONCRETE (f aggregate) Bottom of 36" sewer at 7.1' Light brown to dark gray SANSTONE, friable, weak strength, f-m SS 50/2 light interbedded sands, trace clay, iron staining, severely 10.1 Stopped coring at 16:30. weathered, micaceous Black staining and odor from 2.0 End of Boring @ 8 ft 7.2' to 8.0' bgs. Weathered sandstone fragments encountered at 7.4' 9 Terminated boring at 8.0' bgs due to refusal. 10 12 13



Log of Boring BH-06-11 Sheet of 2 1 Project No. East Project Beazer/INDSPEC Properties 2568412 1426018.44 Location Elevation and Datum North 1161.28 NAVD 1988 Petrolia, Pennsylvania 620021.17 Drilling Agency Date Started Date Finished 3/8/06 3/9/06 Pennsylvania Drilling Company **Drilling Equipment** Completion Depth Rock Depth CME 45C Track Rig 32.4 ft 16.5 ft Size and Type of Bit Disturbed Undisturbed Core Number of Samples **NX Core Barrel** 8 N/A 15.3' Casing Diameter (in) Casing Depth (ft) Completion 24 HR. First Water Level (ft.) 4"OD Flushmount N/A N/A N/A N/A Drop (in) N/A Drilling Foreman Casing Hammer Weight (lbs) N/A N/A Jim Lang Sampler 2" OD x 2' Split Spoon Inspecting Engineer Drop (in) 30" Weight (lbs) Sampler Hammer 140 lbs Mike Fritzges / Dennis Webster Sample Data Coring min/ MATERIAL SYMBOL Remarks Depth Number Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Type Scale (ppm) Gray brown c-f sandy c-f GRAVEL (wet) Started at 11:40. 93.6 Moved location ~25' 8 SS downstream from plan 4 130.1 location. 14 Collected BH-06-11 1.5-2.0 at 24.8 11 12:00. 2 Black f gravelly c-f SAND (wet) Very strong odor from 0 to 8' 8 106 7 9 α 3 5 104.7 5 Drive casing to 4' bgs and Brown olive clayey c-f SAND, some c-f gravel (wet) 5 clean out with core barrel. 259 4 SS 8 5 Visual sheen observed from 4 244 to 6' bgs. 334 11 6 Olive-black gravelly c-f SAND (wet) 70 10 DATA4\2568401\DATA FROM PHILLY\OFFICE DATA\GINT LOGS\INDSPEC BORING LOGS.GPJ 148 6 4 46.4 Artesian conditions noted after split spoon 4. 334 11 8 Drive casing to 8' bgs and Olive c-f SAND, some clay, trace c-f gravel (wet) 64 clean out with core barrel. 69 8 2 9 33 16 6 10 Olive c-f SAND, some c-f gravel, some clay (wet) 0 Observed odor from 8' to 12' 8 3.1 7 20 9 13.1 4.8 6 3.0 13 Olive silty c-f SAND, some c-f gravel, trace clay (wet) 3.3 Drive casing to 13' bgs and SS 6 clean out with core barrel. 8.0 9 0 11 0 14



Log of Boring BH-06-11 Sheet of 2 2 Project Project No. East Beazer/INDSPEC Properties 2568412 1426018.44 Location Elevation and Datum North Petrolia, Pennsylvania 1161.28 NAVD 1988 620021.17 Sample Data Coring min/ Remarks Depth Scale Penetr. resist BL/6in Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Reading (ppm) 16 Casing refusal at 16.5' bgs. Gray c-f GRAVEL, some c-f sand, some silt (wet) 0 8 ss⊟ 5 50/5 Stopped at 17:00 on 3/8/06. Start at 8:00 on 3/9/06. Gray SANDSTONE with trace weathered seams and trace coal Clean out casing with core seams REC=37.8"/38" =98% 1:33 RQD=14"/38" =36% barrel. Split spoon refusal at 16.9' bgs 18 0:43 19 0:36 20 0:16 Gray SANDSTONE 0:45 21 RQD=35.65"/60" =59% REC=60"/60" =100% 0:48 22 0:36 23 1:46 24 0:47 1:04 26 REC=60"/60" =100% RQD=54"/60" =90% 0:47 0:48 28 0:41 29 0:45 0:38 REC=100% RQD=100% Q:\DATA4\2568401\DATA FROM 0:32 32 Stop at 11:00 and backfilled End of Boring @ 32.4 ft boring with bentonite chips. 33



Log of Boring BH-06-12 Sheet of 2 1 Project No. East Project 1426018.7 Beazer/INDSPEC Properties 2568412 Location Elevation and Datum North 1160.64 NAVD 1988 620063.83 Petrolia, Pennsylvania Date Started Drilling Agency Date Finished 3/9/06 3/10/06 Pennsylvania Drilling Company **Drilling Equipment** Completion Depth Rock Depth CME 45C Track Rig 34 ft 18.6 ft Size and Type of Bit Disturbed Undisturbed Core Number of Samples 4 1/4" ID HSA & NX Core Barrel 33.4' 8 N/A Casing Diameter (in) Casing Depth (ft) Completion 24 HR. First Water Level (ft.) 4"OD Flushmount N/A N/A N/A N/A Drop (in) N/A Drilling Foreman Casing Hammer Weight (lbs) N/A N/A Jim Lang Sampler 2" OD x 2' Split Spoon Inspecting Engineer Drop (in) 30" Weight (lbs) Sampler Hammer 140 lbs Mike Fritzges / Dennis Webster Sample Data Coring min/ MATERIAL SYMBOL Remarks Depth Number Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Type LANGAN.GD Reading (ppm) Scale Black stained c-f gravelly c-f SAND, some silt (wet) Started at 13:30. 3 Black staining from 0' to 2' 7.7 2 ω 97.1 Strong odor from 0' to 8' bgs. 3 249 5 2 10.9 Olive m-f SAND, some c-f gravel, trace silt (wet) 10 83.5 20 3 151 35 7 Smooth drilling. Olive-gray clayey c-f SAND, some c-f gravel (wet) 50 5 Auger to 4' bgs. Visible sheen observed from 4' 72 5 to 6' bgs. 22 5 က 49.1 3 45.4 3 6 Black-olive c-f gravelly c-f SAND, trace clay (wet) 206 2 45 A4\2568401\DATA FROM PHILLY\OFFICE DATA\GINT LOGS\INDSPEC BORING LOGS.GPJ SS 5 20 4 28 12 7 ٠ Smooth drilling. 8 Tan-black c-f SAND, some c-f gravel, some silt (wet) 5 8 Auger to 8' bgs. ·Slight odor from 8' to 12' bgs. 2 5 • 9 S 0 0 7 10 3.7 Tan-gray c-f SAND, some c-f gravel, some silt (wet) 5 12.5 5 8 9 14 6 0 7 • Smooth drilling. 13 2.9 5 Auger to 13' bgs. 7.1 • 9 SS 22 Brown, olive, red, tan c-f gravelly c-f SAND (wet) 2.3 16 0.4 16 15



Log of Boring BH-06-12 Sheet of 2 2 Project Project No. East 1426018.7 Beazer/INDSPEC Properties 2568412 Location Elevation and Datum North Petrolia, Pennsylvania 1160.64 NAVD 1988 620063.83 Sample Data MATERIAL SYMBOL Coring min/ Remarks Depth Scale Penetr. resist BL/6in Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Reading (ppm) 16 Olive silty c-f SAND and c-f GRAVEL with iron staining (wet) 0 3 0 8 ω 7 Black COAL 0 50 50/1 Spoon refusal at 18.6' bgs. Drive casing to 18.6' bgs. 1:38 REC=77% RQD=0% Gray MUDSTONE 2:29 0:27 21 2:44 22 REC=58.8"/60" =98% RQD=39.5"/60" =66% 1:38 23 1:30 24 1:08 25 1:11 26 Stop at 17:00 3/9/06. Start at 8:00 3/10/06. 0:53 RQD=29.28"/48" =61% REC=48"/48" =100% 27 0:58 28 1:05 29 Gray MUDSTONE with weathered seam Gray MUDSTONE 1:11 30 1:10 REC=46.08"/48" =96% RQD=31.2"/48" =65% Gray MUDSTONE with weathered seam 31 Gray MUDSTONE 1:15 1:17 33 Q:\DATA4\2568401\DATA FROM 1:50 Stop at 9:15 and backfilled borehole with bentonite chips. End of Boring @ 34 ft 35



Log of Boring BH-06-13 Sheet of 2 1 Project No. East Beazer/INDSPEC Properties 2568412 1426019.85 Location Elevation and Datum North 1160.46 NAVD 1988 620104.91 Petrolia, Pennsylvania Drilling Agency Date Started Date Finished 3/10/06 Pennsylvania Drilling Company 3/13/06 **Drilling Equipment** Completion Depth Rock Depth CME 45C Track Rig 35.1 ft 17.1 ft Size and Type of Bit Disturbed Undisturbed Core Number of Samples 3" OD Roller Bit & NX Core Barrel 8 N/A 17.1' Casing Diameter (in) Casing Depth (ft) Completion 24 HR. First Water Level (ft.) 4"OD Flushmount N/A N/A N/A N/A Drop (in) N/A Drilling Foreman Casing Hammer Weight (lbs) N/A N/A Jim Lang Sampler 2" OD x 2' Split Spoon Inspecting Engineer Drop (in) 30" Weight (lbs) Sampler Hammer 140 lbs Mike Fritzges / Dennis Webster Sample Data Coring min/ MATERIAL SYMBOL Remarks Depth Number Penetr. resist BL/6in (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Sample Description Type LANGAN.GD Scale (ppm) Gray-tan c-f sandy c-f GRAVEL (wet) Start at 11:15. 4 Slight odor and black staining 1.6 from 0' to 2' bgs. 7 SS 7 8 2.2 6 2 Strong odor and visible sheen Tan-brown silty c-f SAND and c-f GRAVEL, trace clay (wet) 57.9 3 observed from 2' to 4' bgs. 814 8 3 406 3 3 Drive casing to 4' bgs and Tan-olive c-f sandy c-f GRAVEL (wet) 61.4 22 clean out with roller bit. Odor observed from 4' to 8' 11 11/2/2009 3:03: 5 က 6 bgs. 23.6 16 15 6 Tan-olive c-f gravelly c-f SAND, trace silt with some iron 55.3 17 staining (wet) 38.3 A4\2568401\DATA FROM PHILLY\OFFICE DATA\GINT LOGS\INDSPEC BORING LOGS.GPJ SS 17 9 4 167 19 85.8 19 ٠ 8 Olive-gray c-f gravelly, c-f SAND, some clay (wet) Drive casing to 8' bgs and 6.9 ١ 10 clean out with roller bit. 5.5 Black staining and a visible 6 • 9 sheen from 8' to 10' bgs. 9 S 9.8 0 5 • 10 Olive-gray c-f gravelly c-f SAND, some clay with weathered 3.8 5 sandstone fragments (wet) 0 ٠ 8 20 9 0 Black staining from 11.5' to 0 6 • 12.0' bgs. • 13 10.7 Drive casing to 13' bgs and 8 clean out with roller bit. 3.3 SS ٠ 11 1.5 14 13.3 14 15



Log of Boring BH-06-13 Sheet 2 of 2 Project No. East 1426019.85 Beazer/INDSPEC Properties 2568412 Location Elevation and Datum North Petrolia, Pennsylvania 1160.46 NAVD 1988 620104.91 Sample Data Coring min/ Remarks Depth Scale Penetr. resist BL/6in Recov. (in) Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Reading (ppm) 17 18 Drive casing to 18' bgs and clean out with roller bit.
- Stop at 13:00 on 3/10/06. Gray weathered MUDSTONE, trace mica (wet) 0 24 7 0 72 50/1 Start at 8:05 on 3/13/06. Gray MUDSTONE Split spoon refusal at 19.1' %96 48% bgs. 2:00 20 1:52 21 REC=60"/60" =100% RQD=47"/60" =78% 1:49 22 1:35 23 1:57 1:53 25 1:36 26 REC=59"/60" =98% RQD=51"/60" =85% 1:29 Rapid drop from 27' to 28' bgs. Gray MUDSTONE with weathered gravelly seam Gray MUDSTONE 0:30 28 1:01 29 0:55 30 31 RQD=44.25"/60" =74% REC=60"/60" =100% 1:56 2:29 33 1:29 0:59 Stop at 10:05 and backfilled End of Boring @ 35.1 ft borehole with bentonite chips.



Log of Boring BH-06-14 Sheet of 2 1 Project No. East Beazer/INDSPEC Properties 2568412 1426020.77 Location Elevation and Datum North 1160.31 NAVD 1988 Petrolia, Pennsylvania 620128.95 Drilling Agency Date Started Date Finished 3/13/06 Pennsylvania Drilling Company 3/14/06 **Drilling Equipment** Completion Depth Rock Depth CME 45C Track Rig 33.8 ft 18.8 ft Size and Type of Bit Disturbed Undisturbed Core Number of Samples 3 1/2" Roller Bit & NX Core Barrel 8 15.0' N/A Casing Diameter (in) Casing Depth (ft) Completion 24 HR. First Water Level (ft.) 4"OD Flushmount N/A N/A N/A N/A Drop (in) N/A Drilling Foreman Casing Hammer Weight (lbs) N/A N/A Jim Lang Sampler 2" OD x 2' Split Spoon Inspecting Engineer Drop (in) 30" Sampler Hammer Weight (lbs) 140 lbs Mike Fritzges / Dennis Webster Sample Data Coring min/ MATERIAL SYMBOL Remarks Depth Number Penetr. resist BL/6in Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Type LANGAN.GD Scale (ppm) Tan-olive m-f SAND, some c-f gravel, some silt (wet) Start at 11:30. 9 Strong odor from 0' to 12' bgs. 58.7 ·Black staining observed from SS 12 9 0' to 4' bgs. 64.8 16.8 7 Report: Log - LANGAN 2 Tan-olive m-f SAND, some c-f gravel, trace silt (wet) 22 99.2 18 6 3 72 1 16 112 10 Drive casing to 4' bgs and Olive-gray c-f gravelly m-f SAND, trace silt (wet) 74.2 8 clean out with a roller bit. 64 8 8 5 က 14.5 10 7.5 9 6 Black staining observed from Olive-gray c-f gravelly c-f SAND (wet) 32.8 8 6' to 10' bgs. 'A4\2568401\DATA FROM PHILLY\OFFICE DATA\GINT LOGS\INDSPEC BORING LOGS.GPJ 39.3 SS 8 22 4 29 15.5 5 ٠ 8 Gray c-f gravelly c-f SAND, trace silt, single 3" clay seam (wet) 9.8 Drive casing to 8' bgs and ۱ 4 clean out with a roller bit. 2.4 Observed a visble sheen from 3 • 8' to 10' bgs. 9 S 5.9 1.8 5 10 0.1 Black silty m-f SAND, trace c-f gravel (wet) 5 30.2 6 9 9 0 8 0 10 13 Black c-f gravelly c-f SAND, trace silt (wet) 0 Drive casing to 13' bgs and 8 clean out with a roller bit. 1.6 SS 10 5 0 0 10 15



Sheet Log of Boring BH-06-14 of 2 2 Project No. East Beazer/INDSPEC Properties 2568412 1426020.77 Location Elevation and Datum North Petrolia, Pennsylvania 1160.31 NAVD 1988 620128.95 Sample Data Coring min/ Remarks Depth Scale Penetr. resist BL/6in Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Reading (ppm) 16 17 Gray weathered mudstone ROCK (moist) Drive casing to 18' bgs and 80 clean out with a roller bit.
Stop at 15:45 on 3/13/06 due 0 50/3 Gray MUDSTONE to lightning. 75% 28% Start at 8:15 on 3/14/06. 1:34 Split spoon refusal at 18.8 20 1:31 RQD=38.5"/48" =80% REC=48"/48" =100% 21 1:33 22 Gray MUDSTONE with weathered seam 1:18 Gray MUDSTONE 23 1:33 24 1:25 25 REC=56.5"/60" =94% RQD=42.5"/60" =71% 1:25 26 1:40 27 Wash water is dark gray. 2:43 28 Wash water is light gray. 3:22 29 Gray MUDSTONE with increased sand content 1:43 30 RQD=35.75"/60" =60% REC=54.5"/60" =91% Gray MUDSTONE with weathered coal seam Gray MUDSTONE 31 2:03 32 2:08 33 Q:\DATA4\2568401\DATA FROM 2:06 34 End of Boring @ 33.8 ft 1:44 Stop at 10:30 and backfilled 35 hole with bentonite chips.



Log of Boring BH-06-15 Sheet of 2 1 Project No. East Beazer/INDSPEC Properties 2568412 1426021.21 Location Elevation and Datum North 1160.17 NAVD 1988 620160.44 Petrolia, Pennsylvania Drilling Agency Date Started Date Finished 3/14/06 Pennsylvania Drilling Company 3/15/06 **Drilling Equipment** Completion Depth Rock Depth 18.4 ft CME 45C Track Rig 33.6 ft Size and Type of Bit Disturbed Undisturbed Core Number of Samples 3 1/2" Roller Bit & NX Core Barrel 8 15.0' N/A Casing Diameter (in) Casing Depth (ft) Completion 24 HR. First Water Level (ft.) 4"OD Flushmount N/A N/A N/A N/A Drop (in) N/A Drilling Foreman Casing Hammer Weight (lbs) N/A N/A Jim Lang Sampler 2" OD x 2' Split Spoon Inspecting Engineer Drop (in) 30" Weight (lbs) Sampler Hammer 140 lbs Mike Fritzges / Dennis Webster Sample Data Coring min/ MATERIAL SYMBOL Remarks Depth Number Penetr. resist BL/6in Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Type emplate LANGAN.GD Scale (ppm) Olive gray c-f gravelly m-f SAND, some silt (wet) Started at 14:00. 12 Strong odor with a visible 2.2 sheen from 0' to 2' bgs. 14 2 Heavy black staining observed 42.4 8 from 0' to 2.7' bgs. 155 10 2 Odor observed from 2' to 4' Olive c-f gravelly m-f SAND, trace silt (wet) 31.1 5 11.5 11 9 3 3.5 10 60. 6 Drove casing to 4' bgs and 4.4 5 cleaned it out with a roller bit. 0 Slight odor observed from 4' to 6 9 5 က 8' bgs. 2.5 10 17.7 9 6 Heavy black staining from 6' to 10.9 8 A4\2568401\DATA FROM PHILLY\OFFICE DATA\GINT LOGS\INDSPEC BORING LOGS.GPJ 3.9 SS 9 4 0 n • 8 8 Drove casing to 8' bgs and 0 Black c-f gravelly c-f SAND (wet) 5 cleaned it out with a roller bit. 1.5 6 • 5 S 4.5 5 1.8 5 10 0 Black c-f gravelly c-f SAND with single seam of soft clay (wet) 5 0 2 ٠ 9 0 0 3 6 • ١ • 13 Olive c-f gravelly (weathered sandstone) m-f SAND, trace silt 0 Drove casing to 13' bgs and 12 cleaned it out with a roller bit. 0 SS • 15 0 11 0 12 15



Sheet Log of Boring BH-06-15 of 2 2 Project Project No. East Beazer/INDSPEC Properties 2568412 1426021.21 Location Elevation and Datum North Petrolia, Pennsylvania 1160.17 NAVD 1988 620160.44 Sample Data MATERIAL SYMBOL Coring min/ Remarks Depth Scale Penetr. resist BL/6in Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Reading (ppm) 16 Wash water is light brown/gray in color at 16.5' bgs. 17 Drove casing to 18' bgs and cleaned it out with a roller bit. • Stop at 17:00 on 3/14/06. Gray weathered MUDSTONE (moist) 0 8 ss⊟ 5 50/5 Gray MUDSTONE 19 Start at 8:00 on 3/15/06. REC=59.5"/60" =99% RQD=41.4"/60" =69% 1:55 20 2:20 21 2:36 22 3:50 23 Gray MUDSTONE with weathered seam Gray MUDSTONE RQD=27.25"/60" =45% REC=51"/60" =85% 1:15 25 26 Gray MUDSTONE with clay seam Gray MUDSTONE 1:20 27 1:07 28 29 1:50 Gray to black wash water REC=60"/60" =100% RQD=48"/60" =80% observed at 18.5' bgs 3:04 30 Gray MUDSTONE with weathered seam Wash water is gray in color at Gray MUDSTONE 30.5' bgs. 1:32 31 Q:\DATA4\2568401\DATA FROM PHIL 2:00 33 Stop at 9:45 and backfilled the End of Boring @ 33.6 ft borehole with bentonite chips. 34 35



Log of Boring BH-06-16 Sheet of 2 1 Project No. East Project Beazer/INDSPEC Properties 2568412 1426023.14 Location Elevation and Datum North 1159.76 NAVD 1988 Petrolia, Pennsylvania 620187.6 Date Started **Drilling Agency** Date Finished 3/15/06 Pennsylvania Drilling Company 3/15/06 **Drilling Equipment** Completion Depth Rock Depth CME 45C Track Rig 33.7 ft 18.6 ft Size and Type of Bit Disturbed Undisturbed Core Number of Samples 3 1/2" Roller Bit & NX Core Barrel 8 15.0' N/A Casing Diameter (in) Casing Depth (ft) Completion 24 HR. First Water Level (ft.) 4"OD Flushmount N/A N/A N/A N/A Drop (in) N/A Drilling Foreman Casing Hammer Weight (lbs) N/A N/A Jim Lang Sampler 2" OD x 2' Split Spoon Inspecting Engineer Drop (in) 3<u>0"</u> Weight (lbs) Sampler Hammer 140 lbs Mike Fritzges / Dennis Webster Sample Data Coring min/ MATERIAL SYMBOL Remarks Depth Number Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Type nplate LANGAN.GDT Scale (ppm) Tan c-f SAND, some c-f gravel, trace silt (wet) Start at 10:45. 6 9.3 SS 8 3 86.7 5 32.8 4 2 Tan-olive c-f sandy SILT, some c-f gravel, trace clay (wet) 35.6 8 37.5 13 4 3 17.9 11 7.8 9 Piece of metal in spoon tip. 0 Dark gray silty c-f SAND, some c-f gravel (wet) Drive casing to 4' bgs and 11/2/2009 3:04:12 PM . 11 clean out with a roller bit. 11 9 5 က 0 13 16 6 Olive gray silty c-f SAND, some c-f gravel (wet) 0 18 DATA4/2568401/DATA FROM PHILLY/OFFICE DATA/GINT LOGS\INDSPEC BORING LOGS.GPJ 0 17 5 4 0 12 28 10 8 Drive casing to 8' bgs and Black c-f gravelly c-f SAND, some silt (wet) 0 3 clean out with a roller bit. 0 6 • 9 S 9.1 4.1 5 10 1.6 9 3.7 9 9 0 6 0 10 13 Black-olive m-f SAND, some c-f gravel; some silt (wet) 0 Drive casing to 13' bgs and 10 clean out with a roller bit. 0 SS 11 14 22 11 10 15



Log of Boring BH-06-16 Sheet 2 of 2 Project No. East 1426023.14 Beazer/INDSPEC Properties 2568412 Location Elevation and Datum North Petrolia, Pennsylvania 1159.76 NAVD 1988 620187.6 Sample Data Coring min/ Remarks Depth Scale Recov. (in)
Penetr. resist Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Reading (ppm) 16 17 Wash water turns light gray at 17' bgs. Drive casing to 18' bgs and clean out with a roller bit. Split spoon refusal at 18.6' Gray weathered MUDSTONE ROCK SS 60 50/1 Gray MUDSTONE 19 RQD=97% 0:53 REC=97% NX CORI 20 1:06 Gray MUDSTONE with weathered seam 21 1:26 Gray MUDSTONE REC=60''/60" =100% RQD=35"/60" =58% 22 1:22 23 2:23 Dark gray wash water at 23.5' bgs. 24 2:00 Light gray wash water at 24.5' 25 1:14 26 1:34 REC=55''/60" =92% RQD=23"/60" =38% 27 1:34 28 2:06 29 2:25 30 2:59 Q:\DATA4\2568401\DATA FROM PHILLY\OFFICE DATA\GINT 31 2:55 REC=100% RQD=100% 1:31 33 Stop at 4:10 and backfilled End of Boring @ 33.7 ft 34 borehole with bentonite chips. 2:05 35



Log of Boring BH-06-17 Sheet of 3 1 Project No. East Project Beazer/INDSPEC Properties 2568412 1426027.53 Location Elevation and Datum North 1160.12 NAVD 1988 Petrolia, Pennsylvania 620205.14 Drilling Agency Date Started Date Finished 3/16/06 3/16/06 Pennsylvania Drilling Company **Drilling Equipment** Completion Depth Rock Depth 35.7 ft CME 45C Track Rig 18.7 ft Size and Type of Bit Disturbed Undisturbed Core Number of Samples 3 1/2" Roller Bit & NX Core Barrel 8 N/A 17.0' Casing Diameter (in) Casing Depth (ft) Completion 24 HR. First Water Level (ft.) 4"OD Flushmount N/A N/A N/A N/A Drop (in) N/A Drilling Foreman Casing Hammer Weight (lbs) N/A N/A Jim Lang Sampler 2" OD x 2' Split Spoon Inspecting Engineer Drop (in) 30" Weight (lbs) Sampler Hammer 140 lbs Mike Fritzges / Dennis Webster Sample Data Coring min/ MATERIAL SYMBOL Remarks Depth Number Penetr. resist BL/6in Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Type nplate LANGAN.GDT Reading (ppm) Scale Black c-f gravelly c-f SAND, some silt (wet) Start at 9:45. Moved 15' downstream (north) 7.6 to avoid overhead utilities. 2 SS Black staining from 0' to 3' 9 5.8 5 Observed odor from 0' to 6' bgs. 2 Sheen and metal debris 1.1 Olive-black c-f gravelly c-f SAND, some silt (wet) 6 observed from 0' to 2' bgs. 0.6 6 20 3 α 0 8 4.2 11 Dark gray c-f gravelly c-f SAND, some silt, trace weathered Drove casing to 4' bgs and 0 6 sandstone (wet) cleaned it out with a roller bit. 5 8 SS 5 7.1 2.3 10 6 2.1 Olive-gray c-f gravelly c-f SAND, some silt, trace weathered LOGS\INDSPEC BORING LOGS.GPJ sandstone gravel (wet) 0 • 8 6 4 0 0 • 8 8 Drove casing to 8' bgs and Black f-c gravelly c-f SAND, some silt (wet) 0 5 cleaned it out with a roller bit. 0 Observed odor from 8' to 12' 10 ∞ bgs. 2 9 0 16 2568401/DATA FROM PHILLY/OFFICE DATA/GINT 0 13 10 0 16 0 16 9 9 0 14 0 14 0 Drove casing to 13' bgs and SS 9 cleaned it out with a roller bit. 0 8 8 7 12



Log of Boring BH-06-17 Sheet 2 of 3 Project Project No. East Beazer/INDSPEC Properties 2568412 1426027.53 Location Elevation and Datum North Petrolia, Pennsylvania 1160.12 NAVD 1988 620205.14 Sample Data MATERIAL SYMBOL Coring min/ Remarks Depth Scale Penetr. resist BL/6in Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Reading (ppm) 16 17 Wash water turns to light gray Gray weathered MUDSTONE (moist) at 17' bgs. 18 Drove casing to 18' bgs and cleaned it out with a roller bit. 49 0 ∞ 50/3 Split spoon refusal at 18.75' Gray MUDSTONE 19 REC=100% bgs. 2:30 RQD=65% 20 2:20 Gray weathered MUDSTONE 21 Gray MUDSTONE 1:39 Gray weathered MUDSTONE 22 REC=59"/60" =98% RQD=5.5"/60" =9% 1:30 **Gray MUDSTONE** 23 2:06 24 2:30 25 2:48 26 2:56 RQD=37.5"/60" =63% REC=60"/60" =100% 27 2.32 Dark gray wash water at 27' 28 2:30 29 2:31 30 2:26 RQD=37.25"/60" =62% REC=60"/60" =100% 1:23 32 2:30 Gray MUDSTONE with 2" weathered seam Gray MUDSTONE



BH-06-17 Log of Boring Sheet 3 of 3 Project No. East 1426027.53 Beazer/INDSPEC Properties 2568412 Location Elevation and Datum North Petrolia, Pennsylvania 1160.12 NAVD 1988 620205.14 Sample Data Coring min/ Remarks Depth Scale PID Reading (ppm) Recov. (in)
Penetr. resist
BL/6in Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) 34 1:49 35 1:30 Stop at 14:30 and backfilled End of Boring @ 35.75 ft 36 borehole with bentonite chips. Q:DATA42568401/DATA FROM PHILLY/OFFICE DATA/GINT LOGS\INDSPEC BORING LOGS.GPJ ... 11/2/2009 3:04:18 PM ... Report. Log - LANGAN ...Template LANGAN.GDT 37 38 39 40 42 43 46 48 49 50 52



Log of Boring BH-06-18 Sheet of 3 1 Project No. East Beazer/INDSPEC Properties 2568412 1426034.09 Location Elevation and Datum North 1159.03 NAVD 1988 Petrolia, Pennsylvania 620223.12 Drilling Agency Date Started Date Finished 3/16/06 Pennsylvania Drilling Company 3/17/06 **Drilling Equipment** Completion Depth Rock Depth CME 45C Track Rig 36.9 ft 19.7 ft Size and Type of Bit Disturbed Undisturbed Core Number of Samples 3" OD Roller Bit & NX Core Barrel 8 N/A 17.0' Casing Diameter (in) Casing Depth (ft) Completion 24 HR. First Water Level (ft.) 4"OD Flushmount N/A 2 N/A Drop (in) N/A Drilling Foreman Casing Hammer Weight (lbs) N/A N/A Jim Lang Sampler 2" OD x 2' Split Spoon Inspecting Engineer Drop (in) 30" Weight (lbs) Sampler Hammer 140 lbs Mike Fritzges / Dennis Webster Sample Data Coring min/ MATERIAL SYMBOL Remarks Depth Number Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Type Log - LANGAN ...Template LANGAN.GD Scale (ppm) Start at 15:30. No recovery WOH Boring located on sediment shelf above creek bed. WOH Split spoon advanced 2' due to 0 weight of hammer. WOH WOH 2 Black staining observed from Black c-f sandy c-f GRAVEL, some silt (wet) 0 2' to 15' bgs. Observed a strong odor from 6 2' to 8.7' bgs 5 α 3 10.1 8 11 Drove casing to 4' bgs and Gray c-f gravelly c-f SAND, some silt (wet) 2.0 cleaned it out with a roller bit. 3.6 13 8 5 0 15 4.1 13 6 0 Olive-black c-f gravelly c-f SAND, some silt (wet) 17 44/2568401/DATA FROM PHILLY/OFFICE DATA/GINT LOGS/INDSPEC BORING LOGS.GPJ 1.4 18 6 1.3 20 1.2 23 8 Drove casing to 8' bgs and 0 17 cleaned it out with a roller bit. 0 Observed an odor from 8.7' to Black m-f SAND, some c-f gravel, some silt (wet) 18 ∞ 2 9 15' bgs 0 4.1 8 10 4.7 8 2.2 13 20 9 2.1 11 1.1 11 13 Black c-f gravelly c-f SAND, some silt (wet) 0 Drove casing to 13' bgs and SS 9 cleaned it out with a roller bit. Stop at 16:45 on 3/16/06. 0 9 Start at 8:15 on 3/17/06. 9 0 10 0 12



Log of Boring BH-06-18 Sheet of 3 2 Project Project No. East Beazer/INDSPEC Properties 2568412 1426034.09 Location Elevation and Datum North Petrolia, Pennsylvania 1159.03 NAVD 1988 620223.12 Sample Data MATERIAL SYMBOL Coring min/ Remarks Depth Scale Number Penetr. resist BL/6in Recov. (in) Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Reading (ppm) 15 16 Black wash water turns to gray Gray weathered MUDSTONE (wet) at 16.5' bgs. 17 18 Drove casing to 18' bgs and cleaned it out with a roller bit. 0 0 9 29 ω 19 0 55 50/3 0 Split spoon refusal at 19.75' **Gray MUDSTONE** 20 bgs. 1:58 RQD=85% REC=85% **NX CORE** 21 2:21 Mechanical break in mudstone at 21.25' bgs. Gray MUDSTONE with 1" gray clay seam 22 Gray MUDSTONE 23 RQD=51.25"/60" =85% REC=60"/60" =100% 2:04 24 2:09 25 1:49 26 1:57 Gray MUDSTONE with 1/2" gray clay seam 27 Gray MUDSTONE 1:47 28 REC=59.25"/60" =99% RQD=36"/60" =60% 1:46 29 Gray MUDSTONE with 2" weathered seam Gray MUDSTONE 30 2:17 31 2:17 32 1:48 Gray MUDSTONE with 1" weathered seam 33 Dark gray wash water at 33.5' Gray MUDSTONE 1:40 bgs.



Log of Boring BH-06-18 Sheet 3 of 3 Project Project No. East 1426034.09 Beazer/INDSPEC Properties 2568412 Elevation and Datum Location North Petrolia, Pennsylvania 1159.03 NAVD 1988 620223.12 Sample Data Coring min/ Remarks Depth Scale PID Reading (ppm) Recov. (in)
Penetr. resist Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) 34 RQD=33.75"/60" =56% REC=60"/60" =100% 2:01 Light gray wash water at 34.5' 35 1:45 36 1:33 Stop at 11:45 and backfilled Q:DATA42568401/DATA FROM PHILLY/OFFICE DATA/GINT LOGS\INDSPEC BORING LOGS.GPJ ... 11/2/2009 3:04:24 PM ... Report. Log - LANGAN ...Template LANGAN.GDT End of Boring @ 36.9 ft borehole with bentonite chips. 1:47 38 39 40 42 43 45 46 48 49 50 51 52



Log of Boring BH-06-19 Sheet of 3 1 Project No. East Project Beazer/INDSPEC Properties 2568412 1426030.44 Location Elevation and Datum North 1161 NAVD 1988 620308.89 Petrolia, Pennsylvania Date Started **Drilling Agency** Date Finished 3/20/06 3/20/06 Pennsylvania Drilling Company **Drilling Equipment** Completion Depth Rock Depth CME 45C Track Rig 38.7 ft 18.6 ft Size and Type of Bit Disturbed Undisturbed Number of Samples 3" OD Roller Bit & NX Core Barrel 8 20.0' N/A Casing Diameter (in) Casing Depth (ft) Completion 24 HR. First Water Level (ft.) 4"OD Flushmount N/A 10.8 N/A Drop (in) N/A Drilling Foreman Weight (lbs) Casing Hammer N/A N/A Jim Lang Sampler 2" OD x 2' Split Spoon Inspecting Engineer Drop (in) 30<u>"</u> Weight (lbs) Sampler Hammer 140 lbs Mike Fritzges / Dennis Webster Sample Data Coring min/ MATERIAL SYMBOL Remarks Depth Number Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Type Template LANGAN.GD Reading (ppm) Scale Gray clayey SILT, trace m-f sand (moist) Start at 8:00. Boring located on sediment shelf above creek bed. WOH N 0 WOH 1 2 Black c-f SAND, trace silt (wet) 0 Black staining from 2' to 8' bgs. Odor observed from 2' to 12' 9 bgs. N 3 0 5 20.4 7 Drove casing to 4' bgs and Black silty c-f GRAVEL and SAND (wet) 13 3 cleaned it out with a roller bit. 0 Sheening observed from 4' to SS 3 20 6' bgs. 5 0 5.9 3 6 Olive gray silty c-f GRAVEL, some c-f sand (wet) 3.5 SS 0 8 22 4 0 0 14 8 Drove casing to 8' bgs and Olive c-f gravelly c-f SAND, some silt (wet) 0 8 cleaned it out with a roller bit. 0 8 2 9 0 2568401/DATA FROM PHILLY/OFFICE DATA/GINT 0 8 10 0 10 0 ∇ 10 8 9 0 10 0 10 13 Brown-gray m-f SAND, some m-f gravel, trace silt (wet) 0 Drove casing to 13' bgs and SS 6 cleaned it out with a roller bit. 0 8 9 7 9



Log of Boring BH-06-19 Sheet of 2 3 Project No. East Beazer/INDSPEC Properties 2568412 1426030.44 Location Elevation and Datum North Petrolia, Pennsylvania 1161 NAVD 1988 620308.89 Sample Data MATERIAL SYMBOL Coring min/ Remarks Depth Scale Penetr. resist BL/6in Recov. (in) Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Reading (ppm) 15 16 17 Wash water turns to light Light brown weathered SANDSTONE (wet) gray-brown at 17.5' bgs. 18 Drove casing to 18' bgs and SS ω / cleaned it out with a roller bit. 50/1 Split spoon refusal at 18.6' Gray SANDSTONE 19 bgs. 0:32 REC=100% RQD=40% Gray SANDSTONE with 1/2" coal seam 20 1:01 Light gray wash water at 20' Dark gray SHALE bgs. Gray MUDSTONE 21 1:40 Gray MUDSTONEwith 1" clay seam 22 1:24 Gray MUDSTONE REC=60"/60" =100% 23 1:26 RQD=34"/60" =57% 24 1:37 25 Gray MUDSTONE with highly fractured seam Gray MUDSTONE 26 Gray MUDSTONE with highly fractured seam Gray MUDSTONE 27 2:26 28 REC=47"/60" =78% RQD=12"/60" =20% 3:06 Gray MUDSTONE with 6" weathered seam Gray MUDSTONE 29 Gray MUDSTONE with 3" weathered seam 2:38 Gray MUDSTONE Reduced water return. 30 4:29 Gray-black wash water at 30.5' bgs. 31 Gray MUDSTONE with highly fractured seam Gray wash returns at 31.5' Gray MUDSTONE bgs. 32 3:00 REC=100% NX CORE RQD=57% 33 1:35



Log of Boring BH-06-19 Sheet 3 of 3 Project No. East 1426030.44 Beazer/INDSPEC Properties 2568412 Elevation and Datum North Location Petrolia, Pennsylvania 1161 NAVD 1988 620308.89 Sample Data Coring min/ Remarks Depth Scale PID Reading (ppm) Recov. (in)
Penetr. resist
BL/6in Number Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) 34 1:41 35 1:50 RQD=24.5"/48" =51% REC=47"/48" =98% 36 2:13 37 Q:DATA42568401/DATA FROM PHILLY/OFFICE DATA/GINT LOGS\INDSPEC BORING LOGS.GPJ ... 11/2/2009 3:04:30 PM ... Report Log - LANGAN ...Template LANGAN.GD 1:48 38 3:10 Stop at 11:45 and backfilled End of Boring @ 38.7 ft borehole with bentonite chips. 39 40 42 43 46 48 49 50 51 52



Log of Boring BH-06-20 Sheet of 3 1 Project No. East Project Beazer/INDSPEC Properties 2568412 1426034.72 Location Elevation and Datum North 1160.25 NAVD 1988 620353.87 Petrolia, Pennsylvania Date Started Drilling Agency Date Finished 3/20/06 3/20/06 Pennsylvania Drilling Company **Drilling Equipment** Completion Depth Rock Depth 35.9 ft CME 45C Track Rig 20.7 ft Size and Type of Bit Disturbed Undisturbed Number of Samples 3" OD Roller Bit & NX Core Barrel 15.0' 11 N/A Casing Diameter (in) Casing Depth (ft) Completion 24 HR. First Water Level (ft.) 4"OD Flushmount N/A 2 N/A Drop (in) N/A Drilling Foreman Casing Hammer Weight (lbs) N/A N/A Jim Lang Sampler 2" OD x 2' Split Spoon Inspecting Engineer Drop (in) 30<u>"</u> Weight (lbs) Sampler Hammer 140 lbs Mike Fritzges / Dennis Webster Sample Data Coring min/ MATERIAL SYMBOL Remarks Depth Number Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Type nplate LANGAN.GDT Reading (ppm) Scale Start at 13:45. Topsoil Brown c-f gravelly c-f SAND, some silt (moist) Borehole located on sediment 0 shelf above creek bed. 3 4 0 3 0 Black staining 1.5' to 4.5' bgs. 5 ∇ 2 Odor observed from 2' to 10' Black c-f gravelly c-f SAND, some silt (wet) 15.9 bgs. 4.3 3 6 α 3 9.5 9.4 3 Drove casing to 4' bgs and Olive-gray c-f gravelly c-f SAND, some silt (wet) 6.0 3 cleaned it out with a roller bit. 0 Some staining from 4' to 12' 8 bgs. 5 0 0 8 6 0 68401/DATA FROM PHILLY/OFFICE DATA\GINT LOGS\INDSPEC BORING LOGS.GPJ 0 8 7 0 10 0 11 8 Drove casing to 8' bgs and 0 6 cleaned it out with a roller bit. 0 5 2 9 0 0 6 10 0 0 12 0 9 0 12 0 11 Brown-olive c-f gravelly c-f SAND, some silt (wet) 0 Drove casing to 13' bgs and SS 7 cleaned it out with a roller bit. 0 8 20 0 12 0 14



Log of Boring BH-06-20 Sheet 2 of 3 Project No. East Project Beazer/INDSPEC Properties 2568412 1426034.72 Location Elevation and Datum North Petrolia, Pennsylvania 1160.25 NAVD 1988 620353.87 Sample Data MATERIAL SYMBOL Coring min/ Remarks Depth Scale Penetr. resist BL/6in Number Recov. (in) Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Reading (ppm) 15 16 17 Wash water turns light brown Gray-brown weathered SANDSTONE at 17' bgs. 18 Drove casing to 18' bgs and cleaned it out with a roller bit. 0 SS 43 0 Black weathered SHALE 27 19 0 Gray weathered MUDSTONE 30 SS 0 9 9 20 Drove casing to 20' bgs and cleaned it out with a roller bit. 0 50/3 Split spoon refusal at 20.75' Gray MUDSTONE 21 bgs. 1:27 Gray MUDSTONE with 1/2" clay seam Gray MUDSTONE 22 RQD=50.75"/60" =85% REC=60"/60" =100% 1:33 23 1:24 24 Gray MUDSTONE with 1/2" weathered seam Gray MUDSTONE Gray MUDSTONE with 1/2" weathered seam 25 Gray MUDSTONE 26 Gray MUDSTONE with 2" clay seam Gray MUDSTONE RQD=42.75"/60" =71% 27 0:58 REC=59"/60" =98% 28 1:09 29 1:17 30 1:25 Gray MUDSTONE with 1" clay seam REC=60"/60" =100% RQD=42"/60" =70% 1:36 Gray MUDSTONE 32 Dark gray wash water at 32' 2:02 bgs. 1:21



BH-06-20 Log of Boring Sheet 3 of 3 Project Project No. East 1426034.72 Beazer/INDSPEC Properties 2568412 Location Elevation and Datum North Petrolia, Pennsylvania 1160.25 NAVD 1988 620353.87 Sample Data Coring min/ fl Remarks Depth Scale Recov. (in)
Penetr. resist PID Reading (ppm) Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) 34 1:24 35 1:26 Stop at 16:45 and encountered 36 End of Boring @ 35.9 ft artesian conditions. Q:DATA42568401/DATA FROM PHILLY/OFFICE DATA/GINT LOGS\INDSPEC BORING LOGS.GPJ ... 11/2/2009 3:04:36 PM ... Report. Log - LANGAN ...Template LANGAN.GDT 37 38 39 40 42 43 45 46 48 49 50 51 52



Log of Boring BH-06-21 Sheet of 3 1 Project No. East 1426035.67 Beazer/INDSPEC Properties 2568412 Location Elevation and Datum North 1158.06 NAVD 1988 620428.04 Petrolia, Pennsylvania Date Started Drilling Agency Date Finished 3/21/06 3/22/06 Pennsylvania Drilling Company Drilling Equipment Completion Depth Rock Depth CME 45C Track Rig 36.7 ft 17 ft Size and Type of Bit Disturbed Undisturbed Core Number of Samples 3" OD Roller Bit & NX Core Barrel 19.1' N/A Casing Diameter (in) Casing Depth (ft) Completion 24 HR. First Water Level (ft.) 4"OD Flushmount N/A N/A N/A N/A Drop (in) N/A Drilling Foreman Casing Hammer Weight (lbs) N/A N/A Jim Lang Sampler 2" OD x 2' Split Spoon Inspecting Engineer Drop (in) 3<u>0"</u> Weight (lbs) Sampler Hammer 140 lbs Mike Fritzges / Dennis Webster Sample Data Coring min/ MATERIAL SYMBOL Remarks Depth Number Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Type GAN.GD Scale (ppm) Gray clay, some c-f gravel, trace c-f sand (wet) Start at 15:05. 0 wон က WOH 2 0 Odor observed from 2' to 2.8' bgs. 0 ·Black staining from 2' to 4' Olive c-f gravelly c-f SAND, some silt (wet) 6 bgs. α 3 0 0 8 Drove casing to 4' bgs and 0 cleaned it out with a roller bit. Slight odor observed from 4' to 10 20 6' bgs. 5 0 0 9 6 0 Olive c-f gravelly c-f SAND, some silt, trace iron staining (wet) 0 20 4 0 0 6 8 Drove casing to 8' bgs and Gray c-f GRAVEL and c-f SAND, trace silt (wet) 0 6 cleaned it out with a roller bit. 0 0 2 9 0 0 5 10 0 0 5 <u>∞</u> 9 0 0 3 13 Brown-olive c-f gravelly c-f SAND, some silt (wet) 0 Drove casing to 13' bgs and 12 cleaned it out with a roller bit. 0 Stop at 16:30 on 3/21/06. 18 Start at 8:00 in 3/22/06. 23 0 ·Light brown wash water from 16 13' to 16' bgs. 0 14



Log of Boring BH-06-21 Sheet of 3 2 Project Project No. East Beazer/INDSPEC Properties 2568412 1426035.67 Location Elevation and Datum North Petrolia, Pennsylvania 1158.06 NAVD 1988 620428.04 Sample Data MATERIAL SYMBOL Coring min/ Remarks Depth Scale Recov. (in) Penetr. resist BL/6in Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Reading (ppm) 15 16 Gray wash water from 16' to 17' bgs. 17 Gray-black wash water from Black COAL 17' to 17.4' bgs. 8 SS= 3 50/3 Drove casing to refusal at 17.4' bgs and clean out with 18 0:36 roller bit. Split spoon refusal at 17.7' REC=44"/48" =92% RQD=9"/48" =19% bgs. 19 0:32 Gray MUDSTONE 20 Gray wash water at 20' bgs. 2:12 21 3:25 Gray MUDSTONE with 2" fractured zone 22 Gray MUDSTONE 1:53 23 RQD=50.5"/60" =84% REC=59"/60" =98% 2:06 24 2:29 25 1:57 26 2:02 Gray MUDSTONE with 1" weathered seam Gray MUDSTONE 27 1:13 RQD=49.75"/60" =83% 28 REC=60"/60" =100% 1:21 29 1:46 30 2:11 31 2:05 32 2:33 33 2:37



Log of Boring BH-06-21 Sheet 3 of 3 Project No. East Beazer/INDSPEC Properties 1426035.67 2568412 Elevation and Datum North Location Petrolia, Pennsylvania 1158.06 NAVD 1988 620428.04 Sample Data Coring min/ Remarks Depth Scale PID Reading (ppm) Recov. (in)
Penetr. resist Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) RQD=53.75"/60" =90% REC=60"/60" =100% 35 3:04 36 2:12 Stop at 10:50 and backfilled End of Boring @ 36.7 ft borehole with bentonite chips. Q:DATA42568401/DATA FROM PHILLY/OFFICE DATA/GINT LOGS\INDSPEC BORING LOGS.GPJ ... 11/2/2009 3:04:43 PM ... Report. Log - LANGAN ...Template LANGAN.GDT 37 38 39 40 42 43 46 48 49 50 52



BH-06-22 Sheet Log of Boring of 2 1 Project No. East Project Beazer/INDSPEC Properties 2568412 1426033.38 Location Elevation and Datum North 620469 Petrolia, Pennsylvania 1162.32 NAVD 1988 Drilling Agency Date Started Date Finished 3/23/06 Pennsylvania Drilling Company 3/23/06 **Drilling Equipment** Completion Depth Rock Depth CME 45C Track Rig 21.6 ft 17.8 ft Size and Type of Bit Disturbed Undisturbed Core Number of Samples 4 1/4" ID Hollow Stem Auger 11 N/A N/A Casing Diameter (in) Casing Depth (ft) Completion 24 HR. First Water Level (ft.) N/A 2.2 N/A N/A Drop (in) N/A Drilling Foreman Casing Hammer Weight (lbs) N/A N/A Jim Lang Sampler 2" OD x 2' Split Spoon Inspecting Engineer Drop (in) 30" Weight (lbs) Sampler Hammer 140 lbs Dennis Webster Sample Data MATERIAL SYMBOL Remarks Depth Number Penetr. resist BL/6in Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Type -ANGAN.GD Scale (ppm) Start drilling at 11:30. **ASPHALT** 12 Light brown c-f subangular GRAVEL, some m-f sand, trace silt 0 (moist) 4 7 0 0 5 Dark brown/black c-f subrounded GRAVEL and m-f SAND, some 2 ∇ 0 silt, trace clay (wet) 0 2 Slight odor and black staining 4 3 α 0 from 2.75' to 3.25' bgs. Sheen observed in spoon. 0 2 Dark brown/black c-f subrounded GRAVEL, some m-f sand, trace Auger down to 4' bgs; smooth 32 silt (wet) drilling. 8.7 2 <u>∞</u> 5 Strong odor, dark black 5.3 staining, and sheen observed 0 in split spoon from 4.25' to 3 12.0' bgs. 6 Black/olive c-f GRAVEL and m-f SAND, some silt, trace clay (wet) 1.2 7.8 3 9 7 4 9.7 3.3 8 Auger down to 8' bgs; smooth 5.2 3 10.1 2 9 3.0 2.2 5 10 6.7 Light brown m-f SAND, some clay, c-f subrounded gravels, trace 0 IDATA4/2568401/DATA FROM PHILLY/OFFICE sandstone fragments (wet) 20 9 0 0 9 Auger down to 12' bgs; smooth 0 drilling. 0 Olive/brown m-f SAND, some clay, sandstone fragments, mica 6 22 flakes, and iron staining (wet) 13 0 Lesser amounts of staining from 10' to 16' with slight odor. 0 7 SS Olive/brown m-f SAND, some c-f subrounded gravel with silt, 0 5 sandstone fragments, iron staining and trace coal (wet) 22 ω 0 8



Log of Boring BH-06-22 Sheet 2 of 2 Project Project No. East 2568412 1426033.38 Beazer/INDSPEC Properties Location Elevation and Datum North Petrolia, Pennsylvania 1162.32 NAVD 1988 620469 Sample Data MATERIAL SYMBOL Remarks Depth Scale Penetr. resist BL/6in Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Reading (ppm) 15 0 SS 11 22 ω 0 11 16 Auger down to 16' bgs; smooth 0 0 8 6 17 0 11 0 15 Light brown/gray SANDSTONE, f- m grained, friable, weak strength, 18 0 f- m grained, deeply weathered, mica flakes, trace coal (wet) emplate LANGAN.GDT 0 17 9 19 20 0 23 0 16 Black COAL 20 0 Auger down to 20' bgs; smooth drilling. 0 6 Light gray MUDSTONE, friable, weak strength, deeply weathered, 21 0 highly fractured (wet) 13 Q:DATA4\2568401\DATA FROM PHILLY\OFFICE DATA\GINT LOGS\\NDSPEC BORING LOGS\GPJ ... 11/2\2009 3:04:49 PM ... Report Log Spoon refusal at 21.6' bgs at End of Boring @ 21.6 ft 16:00. 22 23 24 25 26 27 28 29 30 31 32 33



BH-06-23 Sheet Log of Boring of 2 1 Project No. East Beazer/INDSPEC Properties 2568412 1426024.99 Location Elevation and Datum North Petrolia, Pennsylvania 1161.9 NAVD 1988 620532.34 Drilling Agency Date Started Date Finished 3/24/06 Pennsylvania Drilling Company 3/24/06 **Drilling Equipment** Completion Depth Rock Depth CME 45C Track Rig 21 ft 18 ft Size and Type of Bit Disturbed Undisturbed Core Number of Samples 4 1/4" ID Hollow Stem Auger 11 N/A N/A Casing Diameter (in) Casing Depth (ft) Completion 24 HR. First Water Level (ft.) N/A 1.7 2.8 ∇ N/A N/A Drop (in) N/A Drilling Foreman Casing Hammer Weight (lbs) N/A N/A Jim Lang Sampler 2" OD x 2' Split Spoon Inspecting Engineer Drop (in) 30" Weight (lbs) Sampler Hammer 140 lbs Dennis Webster Sample Data MATERIAL SYMBOL Remarks Depth Number Penetr. resist BL/6in Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Type LANGAN.GD Scale (ppm) Start drilling at 8:15. **ASPHALT** 50 0 Black c-f subangular-subrounded GRAVEL, some m-f SAND (wet) 1/2/2009 3:04:53 PM ... Report: Log - LANGAN ...Template 14 4 0 5 0 ∇ D ... D 2 0 Black staining, odor, and sheen observed in spoon from 0 2' to 7.5' bgs. 5 9 3 α 0 0 2 Auger down to 4' bgs; smooth 0 3 drilling. 0 3 Black c-f subrounded-rounded GRAVEL, some m-f sand, trace silt 22 0 (wet) 0 4 6 0 3 Black/olive c-m SAND and c-f subangular GRAVEL, some silt, trace clay (wet) 0 3 8 7 4 0 Lesser amounts of staining 0 7 observed from 7.5' to 8' bgs 8 0 with slight odor. SS 5 Auger down to 8' bgs; smooth Black/olive m-f SAND, c-f subangular gravel, trace silt with clay 0 (wet) 20 2 9 0 Q:\DATA4\2568401\DATA FROM PHILLY\OFFICE DATA\GINT Weathered SANDSTONE fragments (wet) 0 9 10 0 Black/olive m-f SAND, c-f subangular gravel, trace silt with clay 10 (wet) 0 9 20 9 0 Trace amounts of black Light brown/olive m-f SAND, some clay, trace silt with sandstone staining from 8' to 12' bgs with fragments (wet) 0 slight odor. 8 Auger down to 12' bgs; smooth 0 drilling. 0 12 <u>∞</u> 13 0 9 0 10 SS Olive/brown silty m-f SAND, some clay, trace sandstone, coal 0 fragments, mica flakes (wet) 24 ω 0 6



Log of Boring BH-06-23 Sheet 2 of 2 Project Project No. East Beazer/INDSPEC Properties 2568412 1426024.99 Location Elevation and Datum North Petrolia, Pennsylvania 1161.9 NAVD 1988 620532.34 Sample Data Remarks Depth Scale Penetr. resist BL/6in Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Reading (ppm) 15 0 SS 24 ω Olive/gray thin silty CLAY seam (wet) 0 10 16 Auger down to 16' bgs; smooth Olive/brown silty m-f SAND, some clay, trace sandstone, coal 0 fragments, and mica flakes (wet) 0 22 17 0 0 15 0 13 18 Auger down to 18' bgs; smooth Reddish brown/light gray weathered SANDSTONE, some coal 0 Template LANGAN.GDT fragments, deeply weathered, trace clay, and mica flakes (wet) drilling. 0 13 9 0 15 0 18 Dark black COAL, severly fractured 20 0 Auger down to 20' bgs; smooth 9 drilling. 50/1 Q:DATA4\2568401\DATA FROM PHILLY\OFFICE DATA\GINT LOGS\INDSPEC BORING LOGS.GPJ ... 11/2/2009 3:04:54 PM ... Report: Log - LANGAN 0 0 Split spoon refusal at 21' bgs. End of Boring @ 21 ft 0 22 23 24 25 26 27 28 29 30 31 32 33



Log of Boring BH-06-24 Sheet of 2 1 Project No. East Project Beazer/INDSPEC Properties 2568412 1425674.55 Location Elevation and Datum North Petrolia, Pennsylvania 1164.63 NAVD 1988 619610.77 Drilling Agency Date Started Date Finished 3/22/06 3/23/06 Pennsylvania Drilling Company **Drilling Equipment** Completion Depth Rock Depth CME 45C Track Rig 17.9 ft 17.8 ft Size and Type of Bit Disturbed Undisturbed Core Number of Samples 3" OD Roller Bit 9 N/A N/A Casing Diameter (in) Casing Depth (ft) Completion 24 HR. First Water Level (ft.) 4"OD Flushmount N/A N/A N/A N/A Drop (in) N/A Drilling Foreman Casing Hammer Weight (lbs) N/A N/A Jim Lang Sampler 2" OD x 2' Split Spoon Inspecting Engineer Drop (in) 30" Sampler Hammer Weight (lbs) 140 lbs Dennis Webster Sample Data MATERIAL SYMBOL Remarks Depth Number Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Type NGAN.GD Scale (ppm) Start drilling at 16:00. Dark gray/black silty CLAY, some m-f sand, trace c-f subrounded 3.2 Black staining with strong odor WOH from 0 to 5.5' bgs. ∞ 7.1 Sheen observed in split spoon WOH from 0 to 5' bgs. 1 2 60.2 Black c-f gravelly c-f SAND, some silt, trace clay (wet) 5 Collected sample 97.3 SS BH-06-24 2.5-3.0 at 17:00. 20 3 α 101.2 6 58.7 5 Olive/gray c-f GRAVEL and m-f SAND, some clay, trace sandstone Drove casing to 4' bgs and 90.8 fragments, iron staining (wet) cleaned out with roller bit. 27.2 8 SS <u>∞</u> 5 Slight odor with lesser 13.2 amounts of staining. 1.5 7 6 0 SS 8 Light brown/orange c-f gravelly c-f SAND, some silt and sandstone fragments (wet) 0 DATA4\2568401\DATA FROM PHILLY\OFFICE DATA\GINT LOGS\INDSPEC BORING LOGS 8 22 4 1.2 3.4 7 8 Drove casing to 8' bgs and 0 10 cleaned out with roller bit. Dark orange/brown silty m-f SAND, some clay, trace sandstone 0 fragments (wet) 11 2 24 9 0 10 0 12 10 No odors or PID readings. 0 13 0 15 22 9 0 16 0 18 Drove casing to 12' bgs and 0 11 cleaned out with roller bit. 0 12 20 13 0 11 0 14 Dark brown m-f SAND, some clay, trace silt with sandstone/coal 0 No odors or staining. 10 fragments, iron staining (moist) 24 0 12



Log of Boring BH-06-24 Sheet 2 of 2 Project Project No. East 2568412 1425674.55 Beazer/INDSPEC Properties Location Elevation and Datum North Petrolia, Pennsylvania 1164.63 NAVD 1988 619610.77 Sample Data Remarks Depth Scale Number Penetr. resist BL/6in Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Reading (ppm) 15 0 SS 12 24 ω 0 13 16 Drove casing to 16' bgs and Brown m-f SAND, some subangular sandstone fragments, trace silt 0 cleaned out with roller bit. (moist) 0 10 20 0 17 Brown/light gray SANDSTONE, f- m grained, friable, weak strength, 0 15 deeply weathered (moist) 0 50/4 Encountered bedrock at 17.8 18 End of Boring @ 17.9 ft Q:DATA42568401/DATA FROM PHILLY/OFFICE DATA/GINT LOGS\INDSPEC BORING LOGS.GPJ ... 11/2/2009 3:04:58 PM ... Report. Log - LANGAN ...Template LANGAN.GDT Split spoon refusal at 17.9' bgs at 9:45 on 3/23/06 and 19 backfilled hole with bentonite pellets. 20 21 22 23 24 25 26 27 28 29 30 31 32 33



BH-06-26 Sheet Log of Boring of 1 1 Project No. East Beazer/INDSPEC Properties 2568412 1426090.41 Location Elevation and Datum North Petrolia, Pennsylvania 1161.09 NAVD 1988 621173.76 Drilling Agency Date Started Date Finished 4/4/06 4/4/06 Geo Environmental **Drilling Equipment** Completion Depth Rock Depth Truck Mounted Geoprobe 10 ft N/A Disturbed Size and Type of Bit Undisturbed Core Number of Samples 3 1/4" ID Hollow Stem Auger 3 N/A N/A Casing Diameter (in) Casing Depth (ft) Completion 24 HR. First Water Level (ft.) N/A N/A 3 N/A 2.5 Drop (in) N/A Drilling Foreman Casing Hammer Weight (lbs) N/A N/A Joe Beck Sampler 2" OD, 48" Long Disposable Acetate Liners Inspecting Engineer Drop (in) Auto Weight (lbs) Sampler Hammer Auto Ashley Edelman and Dennis Webster Sample Data MATERIAL SYMBOL Remarks Depth PID Number Penetr. resist BL/6in Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Type Report: Log - LANGAN ...Template LANGAN.GD1 Scale Reading (ppm) Brown/black c-f subangular-subrounded GRAVEL (asphalt 2"), Start at 9:50. some m-c sand (dry) 0 Low to moderate resistance. 19.7 20.0 30 2 2.4 Λ 0 3 Black c subangular GRAVEL with some m-c sand, trace cobble 0 (wet) 0 Black staining from 3.5' to 10' 1.8 Low resistance. Black silty CLAY, some c subangular gravel and f sand (wet) Collected BH-06-26_4.5-5.0 at 0.9 10:15. 5 0 Mild odor. 0 Black m-c SAND and c subangular GRAVEL (wet) 4 6 0 Brown/black silty CLAY, trace f sand and mica flakes (wet) 0 8 Low to moderate resistance. 0 Mild odor from 8' to 10' bgs. 0.8 24 9 က 0.5 Olive clayey m-c SAND, trace f subangular gravel (wet) 0 Q:\DATA4\2568401\DATA FROM PHILLY\OFFICE DATA\GINT Terminated boring at 10:12. End of Boring @ 10 ft 12 13



Log of Boring BH-06-27 Sheet of 1 1 Project No. East Beazer/INDSPEC Properties 2568412 1426046.09 Location Elevation and Datum North Petrolia, Pennsylvania 1159.93 NAVD 1988 621250.18 Date Started Drilling Agency Date Finished 4/4/06 4/4/06 Geo Environmental **Drilling Equipment** Completion Depth Rock Depth **Bobcat Mounted Geoprobe** 12 ft N/A Size and Type of Bit Disturbed Undisturbed Core Number of Samples 2" OD, 48" Long, Stainless Steel Macrocore N/A 3 N/A Casing Diameter (in) Casing Depth (ft) Completion 24 HR. First Water Level (ft.) N/A N/A N/A N/A Drop (in) N/A Weight (lbs) Drilling Foreman Casing Hammer N/A N/A Joe Beck Sampler 2" OD, 48" Long Disposable Acetate Liners Inspecting Engineer Drop (in) A<u>uto</u> Weight (lbs) Sampler Hammer Auto Ashley Edelman and Dennis Webster Sample Data MATERIAL SYMBOL Remarks Depth PID Number Penetr. resist BL/6in Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Type Scale Reading (ppm) Dark brown c sandy c-f subangular GRAVEL (moist) Start at 16:28. Moderate resistance. 0 3.0 Stiff brown f sandy CLAY, some organics and trace mica flakes (moist) 0 36 2 Plastic olive silty CLAY, trace organics (moist) 3 n n Low resistance. n $\sqrt{}$ 5 Dark brown m-f sandy CLAY, some silt (wet) 84 6 Black weathered SANDSTONE fragments (wet) Black staining from 7' to 10.5' bas. Black m-f sandy CLAY, some subangular sandstone fragments 8 Moderate resistance. 0 Olive subrounded c-f gravelly CLAY (wet) n 9 n n 10 n Some black staining from 10.1' Olive m-c sandy CLAY, some subrounded-subangular f gravel, trace to 10.5' bgs. silt (wet) 0 Olive/black c-f subangular gravelly c SAND, trace silt (wet) 0 Q:\DATA4\2568401\DATA FROM PHILLY\OF 0 Terminated boring at 16:48 End of Boring @ 12 ft and collected TDS sample at 16:50. 13



BH-06-28 Sheet Log of Boring of 1 1 Project No. East Project Beazer/INDSPEC Properties 2568412 1426173.88 Location Elevation and Datum North Petrolia, Pennsylvania 1161.11 NAVD 1988 621304.07 Drilling Agency Date Started Date Finished 4/5/06 Geo Environmental 4/5/06 **Drilling Equipment** Completion Depth Rock Depth **Bobcat Mounted Geoprobe** 12 ft N/A Size and Type of Bit Disturbed Undisturbed Core Number of Samples 2" OD, 48" Long, Stainless Steel Macrocore 3 N/A N/A Casing Diameter (in) Casing Depth (ft) Completion 24 HR. First Water Level (ft.) 6.5 N/A N/A N/A N/A Drop (in) N/A Drilling Foreman Casing Hammer Weight (lbs) N/A N/A Joe Beck Sampler 2" OD, 48" Long Disposable Acetate Liners Inspecting Engineer Drop (in) A<u>uto</u> Weight (lbs) Sampler Hammer Auto Ashley Edelman and Dennis Webster Sample Data MATERIAL SYMBOL Remarks Depth PID Number Penetr. resist BL/6in Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Type emplate LANGAN.GD Scale Reading (ppm) Brown/tan c subangular GRAVEL, some m-c sand (dry) 0 Start at 14:41. Moderate to heavy resistance. 0 0 0 84 2 Brown/tan m-c sandy CLAY, some f-c subangular gravel, trace mica 0 flakes (moist) LIMESTONE fragments (dry) 3 Refusal at 3' bgs and shifted 0 Brown/tan m-c sandy CLAY, some f-c subangular gravel, trace mica location 3' south. flakes (moist) n Moderate resistance. n 0 Brown/tan m-c sandy CLAY, some f subangular gravel, organics and trace mica flakes (moist to wet) 5 0 0 36 6 0 ∇ Black staining and odor from 3.2 6.5' to 10.5' bgs. 2.2 Collected BH-06-28_6.5-7.0 at Black clayey c SAND, some f subangular gravel (wet) 15:10. 13.4 8 Moderate resistance. Dark brown f subrounded gravelly CLAY, some m-f sand, trace 0 organics (wet) 11.7 9 8.3 Stiff black silty CLAY, trace mica flakes and organics (moist) 5.9 HSI 48 10 2.0 Brown clayey m SAND, some weathered sandstone fragments, 0 trace mica flakes (moist) 2.2 0 Black staining with odor from Black clayey m-c SAND, f subrounded gravel, trace mica flakes and organics (moist) End of Boring @ 12 ft 11.6' to 12' bgs Q:\DATA4\2568401\DATA FROM Terminated boring at 15:01 and collected TDS sample at 15:10. 13



BH-06-29 Sheet Log of Boring of 1 1 Project No. East 1426235.868 Beazer/INDSPEC Properties 2568412 North Location Elevation and Datum Petrolia, Pennsylvania 1159.56 NAVD 1988 621271.678 Date Started **Drilling Agency** Date Finished 4/5/06 4/5/06 Geo Environmental **Drilling Equipment** Completion Depth Rock Depth **Bobcat Mounted Geoprobe** 12 ft N/A Size and Type of Bit Disturbed Undisturbed Core Number of Samples 2" OD, 48" Long, Stainless Steel Macrocore 3 N/A N/A Casing Diameter (in) Casing Depth (ft) Completion 24 HR. First Water Level (ft.) N/A N/A 2.5 N/A Drop (in) N/A Weight (lbs) Drilling Foreman Casing Hammer N/A N/A Joe Beck Sampler 1" OD, 48" Long Disposable Acetate Liners Inspecting Engineer Drop (in) A<u>uto</u> Weight (lbs) Sampler Hammer Auto Ashley Edelman Sample Data MATERIAL SYMBOL Remarks Depth PID Number Penetr. resist BL/6in Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Type LANGAN.GD Scale (ppm) Orange/tan c subangular GRAVEL, some m-c sand, trace silt (dry) Start at 8:53. Low to heavy resistance. 0 Brown/tan silty m-c SAND, some c subangular gravel, trace clay and sandstone fragments (moist) 0 Black staining with slight odor from 1.2' to 1.5' bgs. 0 <u>∞</u> 2 0 0 3 Refusal at 3' bgs so shifted 0 locaiton 3' north. n ∇ Low to heavy resistance. Olive silty m-c SAND, some f subangular gravel, trace clay (wet) O 0 5 Black staining with slight odor Black clayey SILT, some f sand and organics (wet) 0 from 5' to 8.8' bgs. Black c SAND and f subangular GRAVEL (wet) 2.4 34 6 0 Stiff black silty CLAY, trace mica flakes and organics (moist) 0 7 0 8 Moderate resistance. Stiff black/olive green silty CLAY, trace weathered sandstone 3.2 fragments and organics (moist) 3.4 9 1.5 0 39 10 0 0 0 Q:\DATA4\2568401\DATA FROM PHILLY 0 Terminated boring at 9:31. End of Boring @ 12 ft 13



BH-06-30 Sheet Log of Boring of 1 1 Project No. East Beazer/INDSPEC Properties 2568412 1426248.25 Location Elevation and Datum North Petrolia, Pennsylvania 1158.98 NAVD 1988 621244.07 Date Started **Drilling Agency** Date Finished 4/4/06 4/4/06 Geo Environmental **Drilling Equipment** Completion Depth Rock Depth **Bobcat Mounted Geoprobe** 12 ft N/A Size and Type of Bit Disturbed Undisturbed Core Number of Samples 2" OD, 48" Long, Stainless Steel Macrocore 3 N/A N/A Casing Diameter (in) Casing Depth (ft) Completion 24 HR. First Water Level (ft.) N/A N/A 0.2 N/A N/A Drop (in) N/A Weight (lbs) Drilling Foreman Casing Hammer N/A N/A Joe Beck Sampler 2" OD, 48" Long Disposable Acetate Liners Inspecting Engineer Drop (in) A<u>uto</u> Weight (lbs) Sampler Hammer Auto Ashley Edelman Sample Data MATERIAL SYMBOL Remarks Depth PID Number Penetr. resist BL/6in Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Type Report: Log - LANGAN ...Template LANGAN.GD1 Scale (ppm) Brown c subangular GRAVEL, some c sand (dry to wet) 0 Start at 13:40. Low resistance. 0 Black c subangular GRAVEL, some c sand, trace clay (wet) Black staining from 0.5' to 7' 0 bgs with a slight odor. 0 <u>∞</u> 2 0 3 n n Low resistance. n Black silty CLAY, some c subangular gravel (wet) 0 5 0 Black sheen from 5.5' to 6.5' 0 Black clayey m-s SAND, some f-c subangular gravel (wet) bgs. 84 6 0 11.8 Stiff brown silty CLAY, some organics, trace mica flakes and f 7 7.6 subangular gravel (moist) 2.1 8 Moderate resistance. Black-brown m-c sandy CLAY, some c subangular gravel (moist) 0 Black staining from 8' to 11' 0 bgs. 9 Black clayey SAND, some f subangular gravel and organics (wet) 0 0 HSI 42 10 Olive CLAY, trace organics, mica flakes, and weathered sandstone 0 fragments (moist) 5.5 1.1 1.2 Q:\DATA4\2568401\DATA FROM PHII Terminated boring at 14:15 End of Boring @ 12 ft and collected TDS sample at 13:51. 13



BH-06-31 Sheet Log of Boring of 1 1 Project No. East Project Beazer/INDSPEC Properties 2568412 1426247.12 Location Elevation and Datum North Petrolia, Pennsylvania 1159.23 NAVD 1988 621222.29 Drilling Agency Date Started Date Finished 4/4/06 4/4/06 Geo Environmental **Drilling Equipment** Completion Depth Rock Depth **Bobcat Mounted Geoprobe** 10 ft N/A Size and Type of Bit Disturbed Undisturbed Core Number of Samples 4" OD, 60" Long, Stainless Steel Macrocore 3 N/A N/A Casing Diameter (in) Casing Depth (ft) Completion 24 HR. First Water Level (ft.) N/A $\sqrt{}$ 1.2 N/A N/A Drop (in) N/A Drilling Foreman Casing Hammer Weight (lbs) N/A N/A Joe Beck Sampler 4" OD, 48" Long Disposable Acetate Liners Inspecting Engineer Drop (in) A<u>uto</u> Weight (lbs) Sampler Hammer Auto Ashley Edelman and Dennis Webster Sample Data MATERIAL SYMBOL Remarks Depth PID Number Penetr. resist BL/6in Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Type Template LANGAN.GD Scale Reading (ppm) Brown c subangular GRAVEL, some c sand (dry to wet) 0 Start at 11:39. Moderate resistance. 0 0 0 39 2 0 Black staining with odor from Stiff orange-brown CLAY, some trace mica flakes (wet) 2.2' to 7.8'bgs. 3 Mild odor. n Brown c subangular GRAVEL and c SAND (wet) n Stiff brown olive-green CLAY, some c-f subangular-subrounded gravel, trace mica flakes (wet) Low resistance. 44 Black silty c SAND, some c subangular gravel (wet) Strong odor with rainbow Black silty c SAND, some clay and c subangular gravel (wet) sheening and smearing from 4' 5 7.2 to 6.5' bgs. 15.4 Stiff black CLAY, some c subangular gravel and m-c sand (wet) 84 6 α 8.2 Black/olive CLAY, some organics, trace weathered sandstone fragments and f subangular-subrounded gravel (wet) 0 8 Heavy resistance. 0 0 Black staining and strong odor 24 9 က Black f subangular gravelly m-c SAND (wet) 2.0 from 8.8' to 9.6' bgs. 2.9 Q:\DATA4\2568401\DATA FROM PHILLY\OFFICE DATA\GIN` Black/olive CLAY, some organics, trace weathered sandstone fragments and f şı subangular-subrounded grav End of Boring @ 10 ft Terminated boring at 12:28. 12 13



BH-06-32 Sheet Log of Boring of 1 1 Project No. East Beazer/INDSPEC Properties 2568412 1426176.03 Location Elevation and Datum North Petrolia, Pennsylvania 1159.81 NAVD 1988 621142.26 Date Started **Drilling Agency** Date Finished 4/4/06 4/4/06 Geo Environmental **Drilling Equipment** Completion Depth Rock Depth **Bobcat Mounted Geoprobe** 12 ft N/A Size and Type of Bit Disturbed Undisturbed Core Number of Samples 2" OD, 48" Long, Stainless Steel Macrocore 3 N/A N/A Casing Diameter (in) Casing Depth (ft) Completion 24 HR. First Water Level (ft.) 5 N/A N/A N/A N/A Drop (in) N/A Drilling Foreman Casing Hammer Weight (lbs) N/A N/A Joe Beck Sampler 2" OD, 48" Long Disposable Acetate Liners Inspecting Engineer Drop (in) A<u>uto</u> Weight (lbs) Sampler Hammer Auto Ashley Edelman and Dennis Webster Sample Data MATERIAL SYMBOL Remarks Depth PID Number Penetr. resist BL/6in Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) -ANGAN.GD Scale Reading (ppm) **ASPHALT** 0 Start at 15:40. Heavy resistance. 0 Brown/tan c subangular gravelly c SAND (dry) 0 Dark brown/tan c subangular gravelly c SAND, some silt (dry) 0 LANGAN 84 2 3 Brown/tan clayey m-c SAND, some silt, trace c-f subangular gravel n and organics (moist) n Moderate resistance. n 0 5 Black staining with slight odor and sheen from 5' to 5.5' bgs. Black c subangular-subrounded gravelly CLAY, trace wood (wet) 0 0 Brown c subrounded-subangular gravelly c SAND, some silt, trace weathered sandstone fragments (wet) 4 6 0 0 0 0 Black/dark brown silty CLAY, trace organics and mica flakes (moist) Rainbow sheen and black 8 Black c subangular gravelly CLAY (moist) 0 staining with slight odor from 7.75' to 9.5' bgs. Gray/brown silty CLAY, some organics, trace mica flakes (moist) 0 Moderate resistance. 9 0 0 39 10 n 0 0 Q:\DATA4\2568401\DATA FROM PHILL\ 0 Terminated boring at 16:01 End of Boring @ 12 ft and collected TDS sample at 15:53. 13



Log of Boring BH-06-33 Sheet of 1 1 Project No. East Beazer/INDSPEC Properties 2568412 1426033.38 Location Elevation and Datum North 1160.84 NAVD 1988 620469 Petrolia, Pennsylvania Drilling Agency Date Started Date Finished 4/5/06 4/5/06 Geo Environmental **Drilling Equipment** Completion Depth Rock Depth **Bobcat Mounted Geoprobe** 12 ft N/A Size and Type of Bit Disturbed Undisturbed Core Number of Samples 2" OD, 48" Long, Stainless Steel Macrocore 3 N/A N/A Casing Diameter (in) Casing Depth (ft) Completion 24 HR. First Water Level (ft.) N/A N/A 1.8 N/A 2.2 Drop (in) N/A Weight (lbs) Drilling Foreman Casing Hammer N/A N/A Joe Beck Sampler 2" OD, 48" Long Disposable Acetate Liners Inspecting Engineer Drop (in) Auto Weight (lbs) Sampler Hammer Auto Ashley Edelman Sample Data MATERIAL SYMBOL Remarks Depth Number Penetr. resist BL/6in Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Type JGAN.GD Reading (ppm) Scale Gray c subangular limestone GRAVEL (dry) Started at 10:04. Low resistance. 0 0 Tan f-c subangular gravelly C SAND, some silt (dry to wet) 0 Q:DATA4/2568401/DATA FROM PHILLY/OFFICE DATA/GINT LOGS\\\INDSPEC BORING LOGS.GPJ ... 11/2/2009 3:05:24 PM ... Report Log - LANGAN 30 2 No recovery 3 0 0 Low to heavy resistance. Black c SAND and c subangular GRAVEL (wet) 0 Poor recovery. No recovery Black staining, slight odor, and sheen from 4' to 5.4' bgs. 0 5 0 0 6 0 0 0 0 8 Heavy resistance. Black c SAND and c subangular GRAVEL (wet) 0 Poor recovery. Black staining and slight odor with sheen 8' to 8.5' bgs. 0 No recovery 9 0 0 10 0 0 0 0 Terminated boring at 10:18. End of Boring @ 12 ft 13



BH-06-34 Sheet Log of Boring of 1 1 Project No. East Beazer/INDSPEC Properties 2568412 1426128.67 Location Elevation and Datum North Petrolia, Pennsylvania 1160.23 NAVD 1988 621048.11 Drilling Agency Date Started Date Finished 4/5/06 Geo Environmental 4/5/06 **Drilling Equipment** Rock Depth Completion Depth **Bobcat Mounted Geoprobe** 12 ft N/A Size and Type of Bit Disturbed Undisturbed Core Number of Samples 2" OD, 48" Long, Stainless Steel Macrocore 3 N/A N/A Casing Diameter (in) Casing Depth (ft) Completion 24 HR. First Water Level (ft.) 5.2 N/A N/A N/A N/A Drop (in) N/A Casing Hammer Weight (lbs) Drilling Foreman N/A N/A Joe Beck Sampler 2" OD, 48" Long Disposable Acetate Liners Inspecting Engineer Drop (in) A<u>uto</u> Weight (lbs) Sampler Hammer Auto Ashley Edelman Sample Data MATERIAL SYMBOL Remarks Depth PID Number Penetr. resist BL/6in Sample Description Type (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Femplate LANGAN.GD Scale (ppm) Brown/red brown silty m-c SAND, some c subangular gravel (moist) Start at 13:52. Moderate resistance. 0 Strong odor and red brown to 13.4 burnt black staining from 0.8' to 2.6' bgs. +1600 Dark brown to black silty CLAY, some f sand and organics, trace 39 2 +1600 weathered sandstone fragments and wood (moist) Strong odor that maxed the +1600 PID meter. Olive silty CLAY, some f sand and organics, trace weathered 3 324 sandstone fragements and mica flakes (moist) Moderate resistance. Dark red brown m-c sandy CLAY, some silt, trace f subrounded 200 Red brown staining with strong gravel (moist) 56.6 odor from 4' to 4.8' bgs. Tan silty CLAY, trace organics and mica flakes (moist) 5 Staining with strong odor from 36.6 Tan to black silty m-c SAN, some clay, trace organics (wet) 5.5' to 11' bgs. 19.7 84 6 α 21.8 LOGS\INDSPEC BORING LOGS.GPJ 10.2 Brown/black c subangular gravelly m-c SAND, some silt, trace 7 1.3 organics (wet) 5.7 Dark gray silty CLAY, some organics, trace mica flakes (wet) 8 Moderate resistance. 34.4 Dark gray silty m-c SAND, some clay (wet) 179 9 38.8 Red brown stringers Dark gray silty m-c SAND, some c-f subangular to subrounded suspended in 9.2' to 10.5' bgs DATA/GINT gravel (wet) 50.2 HS! interval. 48 10 7.8 Dark gray clayey SAND, some silt, trace mica flakes and organics 10.8 Q:\DATA4\2568401\DATA FROM PHILLY\OFFICE 13.6 Dark gray silty CLAY, some f sand, trace organics (moist) 7.4 Terminated boring at 14:12 End of Boring @ 12 ft and collected TDS sample at 14:15. 13



BH-06-35 Sheet Log of Boring of 1 1 Project No. East Beazer/INDSPEC Properties 2568412 1426118.8 Location Elevation and Datum North 621300.62 Petrolia, Pennsylvania 1161.5 NAVD 1988 Drilling Agency Date Started Date Finished 4/5/06 4/5/06 Geo Environmental **Drilling Equipment** Completion Depth Rock Depth **Bobcat Mounted Geoprobe** 12 ft N/A Size and Type of Bit Disturbed Undisturbed Core Number of Samples 2" OD, 48" Long, Stainless Steel Macrocore 3 N/A N/A Casing Diameter (in) Casing Depth (ft) Completion 24 HR. First Water Level (ft.) N/A N/A N/A N/A Drop (in) N/A Drilling Foreman Casing Hammer Weight (lbs) N/A N/A Joe Beck Sampler 2" OD, 48" Long Disposable Acetate Liners Inspecting Engineer Drop (in) A<u>uto</u> Weight (lbs) Sampler Hammer Auto Ashley Edelman Sample Data MATERIAL SYMBOL Remarks Depth PID Number Penetr. resist BL/6in Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Scale (ppm) Tan c subangular limestone GRAVEL and m-c SAND (moist to dry) Start at 15:47. Moderate resistance. 11.0 48.7 Strong odor with some black Brown/black silty m-c SAND, some c-f subangular gravel, trace 17.7 staining from 1.4' to 1.6' bgs. organics and mica flakes (moist) 36 2 0 Black staining with slight odor 0 Black silty CLAY, some f sand, trace sandstone fragments, from 2.5' to 3' bgs. 3 organics, and wood (moist) n n Moderate resistance. Black silty CLAY, some f-m sand and f-c subangular gravel, trace n organics (wet) Black to dark gray staining with 0 slight odor from 4' to 12' bgs. Tan c subangular SANDSTONE fragments 5 0 Black stiff silty CLAY, some f sand, trace mica flakes, organics, and 0 wood (wet) 36 6 N 3.9 Plastic tan/black silty CLAY, some f sand, trace mica flakes, 1.3 organics, and wood (wet) 7 0 0 8 Moderate resistance. Plastic dark gray/tan silty CLAY, trace organics and mica flakes 0 (wet) n 9 n Dark gray m-c SAND, some f-c subangular sandstone gravel, trace Q:\DATA4\2568401\DATA FROM PHILLY\OFFICE DATA\GINT n sandstone cobbles (wet) 32 10 n 0 0 0 Terminated boring at 16:29. End of Boring @ 12 ft 13



BH-08-01 Sheet Log of Boring of 2 1 Project No. East Project Beazer/INDSPEC Properties 2568412 1426012.73 Location Elevation and Datum North Petrolia, Pennsylvania 1165.683383 NAVD 1988 620054.4482 Drilling Agency Date Started Date Finished 3/25/08 3/26/08 Pennsylvania Drilling Rock Depth **Drilling Equipment** Completion Depth Minute Man Portable Drill 15.3 ft NA Size and Type of Bit Disturbed Undisturbed Core Number of Samples 3" Auger NA NA Casing Diameter (in) Casing Depth (ft) Completion 24 HR First Water Level (ft.) 3" temporary casing NA ∇ NA 11.8' Drop (in) 24" Casing Hammer Weight (lbs) Drilling Foreman Donut 70 lbs Jim Lang Sampler 2" Split spoon / Manual advancement Inspecting Engineer Drop (in) 24" Sampler Hammer Weight (lbs) 70 lbs Donut Kristen Ward/ Dennis Webster Sample Data MATERIAL SYMBOL Remarks Depth PID Number Penetr. resist BL/6in Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Type Template LANGAN.GD Scale Reading (ppm) 1013 Start concrete coring CONCRETE with coarse aggregate 0 JRF 9 with 3" core bit Dark brown m-c SAND, some clay and subangular gravel, trace silt 0 2 and mica (moist) SS 4 1340 Started manual SS 0 3 50/1 Strong odor / black staining 0 Log - LANGAN from 0.7 - 1.5' 2 0 Ream with 3" casing / core bit Dark brown m-c SAND, some silt, trace subrounded/subangular 25 at 1445 0 gravel (moist) 50 3 Report: CONCRETE fragments (moist) n α ω 15 n 3 Black-brown gravelly CLAY, some f-m sand, trace silt (wet) n Dark black staining / strong odor from 4.3 - 4.5 0 CONCRETE with coarse aggregate 5 CARE Ream hole to 5.8' with 3" core 0 α ∞ bit. Drive 3" casing to 5.8' 0 Black silty f-m SAND, some f-c subangular gravel and clay (wet) 6 9 1600 stopped drilling 0 568401/DATA FROM PHILLY/OFFICE DATA/GINT LOGS/INDSPEC BORING LOGS.GPJ 3/26/08 resume drilling at Ø 15 14.3 0815 7 က 0903 started manual SS 17 30.1 Black staining / strong odor Ò 10 from 5.8' - 8.8' 35.5 Collect env. sample 8 14 18.3 BH-08-01_6.5-7.0 at 0925 16 8.5 Drive 3" casing to 7.8', 8 9 23 Grey silty f-m SAND, some f-c angular gravel (sandstone fragments) 5.0 9 8.1 .5 SS 10 3 Lt. Grey-brown clayey SAND, some silt (wet) 2.3 10 8.9 - trace sandstone fragments 9 2 10.9 18 0940 drive casing to 11.8', 1.7 began manual SS 23 0 Slight odor with black staining 12 31 7.1 from 11.5' - 13.0' Olive grey-brown silty SAND, some f-c subangular gravel, brown-red 38 4.2 22 9 mottling (moist) 13 34 13.2 26 5.5 Dark grey-black SILT and SAND, trace sandstone fragments 69.5 4" of slough at top of spoon 20 10 possible cause for high PID 47.9



Log of Boring BH-08-01 Sheet 2 of 2 Project Project No. East 1426012.73 Beazer/INDSPEC Properties 2568412 Elevation and Datum Location North Petrolia, Pennsylvania 1165.683383 NAVD 1988 620054.4482 Sample Data Remarks Depth Scale Recov. (in)
Penetr. resist
BL/6in Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Reading (ppm) 15 -22 2.0 Collected env. sample Light grey SILT and SAND, some sandstone fragments 7 BH-08-01_14.7-15.3 at 1115 2.4 End of Boring @ 15.3 ft Terminate boring 15.3' bgs at 1100 16 1115 Removed casing, backfilled hole with Bentonite chips and sealed with concrete 17 patch 18 Q:DATA42568401/DATA FROM PHILLY/OFFICE DATA/GINT LOGS\INDSPEC BORING LOGS.GPJ ... 11/2/2009 3:05:35 PM ... Report. Log - LANGAN ...Template LANGAN.GDT 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33



BH-08-02 Sheet Log of Boring of 2 1 Project No. East Project Beazer/INDSPEC Properties 2568412 1426011.933 Location Elevation and Datum North Petrolia, Pennsylvania 1165.891365 NAVD 1988 619922.6772 Date Started Drilling Agency Date Finished 3/26/08 3/26/08 Pennsylvania Drilling **Drilling Equipment** Completion Depth Rock Depth 15 ft Minute Man Portable Drill NA Size and Type of Bit Disturbed Undisturbed Core Number of Samples 3" Auger 8 NA NA Casing Diameter (in) Casing Depth (ft) Completion 24 HR. First Water Level (ft.) 3" temporary casing 14.01' NA \mathbf{V} NA Drop (in) 24" Casing Hammer Weight (lbs) Drilling Foreman Donut 70 lbs Jim Lang Sampler 2" O.D. Split Spoon Inspecting Engineer Drop (in) 24" Weight (lbs) Sampler Hammer 70 lbs Donut Bobby Huff/ Dennis Webster Sample Data MATERIAL SYMBOL Remarks Depth PID Number Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Type Template LANGAN.GD Scale Reading (ppm) 1303 Start boring (approx. 2.0' Brown f-m subrounded and subangular GRAVEL, some f-m sand below elevation of MW-74A) (wet) 0 3 9 Wet at 1.0' bgs 0 0 Report: Log - LANGAN .. 5 2 0 Red BRICK and CINDERS, some f sand, some silt (wet) 8 0 8 7 3 α 0 11 Black silty SAND and f GRAVEL (wet) 0 Black staining at 3.7' bgs 14 1314 ream hole with auger, 0 11 drive 3" casing to 4.0' bgs 0 \cdot 10 5 4 Black staining / stong odor / 0 Black silty CLAY, some f-m sand, trace subangular gravel (wet) sheen 4.0'-6.0' 0 Collect env. sample - some f subangular gravel 13 BH-08-02_5.5-6.0 at 1400 6 0 Black staining / moderate odor/ 0 sheen 6.0'-7.1' 14 20 0 19 Olive-brown f-m SAND, some clay and silt, trace sandstone 0 fragments (moist) 14 8 0 9 0 5 2 9 0 12 Dark gray firm CLAY, some silt and f-m sand (moist) Q:\DATA4\2568401\DATA FROM PHILLY\OFFICE DATA\GINT 0 12 10 Collected env sample 0 10 BH-08-02_10.25-10.75 at 0 1545 Brownish - gray silty CLAY, trace f subangular gravel, very soft to 10 8 soft, (moist) 9 0 0 12 0 Light-gray SILT and red f-m SAND, some red-orange 19 sandstone at 13.8'-14.0', tight and dry 0 42 9 13 0 16 19 SS No recovery 14' - 15' 5 ω 0 14



Log of Boring BH-08-02 Sheet 2 of 2 Project No. East 1426011.933 Beazer/INDSPEC Properties 2568412 Location Elevation and Datum North Petrolia, Pennsylvania 1165.891365 NAVD 1988 619922.6772 Sample Data Remarks Depth Scale PID Reading (ppm) Recov. (in)
Penetr. resist
BL/6in Number Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) 15 1545 Terminated boring at End of Boring @ 15 ft backfilled hole with bentonite chips 16 17 18 Q:DATA42568401/DATA FROM PHILLY/OFFICE DATA/GINT LOGS\INDSPEC BORING LOGS.GPJ ... 11/2/2009 3:05:39 PM ... Report. Log - LANGAN ...Template LANGAN.GDT 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33



BH-08-03 Sheet Log of Boring of 2 1 Project No. East Project Beazer/INDSPEC Properties 2568412 1426034.79 Location Elevation and Datum North 620288.0053 Petrolia, Pennsylvania 1158.945 NAVD 1988 Drilling Agency Date Started Date Finished 3/27/08 Pennsylvania Drilling 3/27/08 **Drilling Equipment** Completion Depth Rock Depth CME 45 Track Rig 18 ft 15.6 ft Size and Type of Bit Disturbed Undisturbed Core Number of Samples 2 7/8" Roller Bit 9 NA NA Casing Diameter (in) Casing Depth (ft) Completion 24 HR. First Water Level (ft.) 0 NA $\sqrt{}$ NA 3.5" temporary steel 16.0' Drop (in) 30" Drilling Foreman Casing Hammer Weight (lbs) 140 lbs Auto Jim Lang Sampler 2" O.D. Split Spoon Inspecting Engineer Drop (in) 3<u>0"</u> Weight (lbs) Sampler Hammer 140 LBS **Bobby Huff** Sample Data MATERIAL SYMBOL Remarks Depth Number Penetr. resist BL/6in Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Type Template LANGAN.GD Scale (ppm) 1126 Start - water level 4 Dark brown silty f-m SAND (wet) 2 a.g.s. 6.8 12 O Black staining / strong odor Black silty f-c SAND, some f subangular gravel (wet) 7.6 8 from 0.0 - 2.0' 4.5 Report: Log - LANGAN 4 2 Black gravelly f-c SAND, trace silt (wet) 3 18.1 5 7 3 α 10.5 Θ : Olive-gray f-c gravelly f-c SAND, some silt, trace sandstone 15.3 7 fragments (wet) 11/2/2009 3:05:43 PM 4.6 0 5.2 SS 5 6.6 Black silty f-m SAND, trace f gravel, loose (wet) 3.8 Black staining / slight odor 5 from 4.0'-6.0' 6 9.2 88401/DATA FROM PHILLY/OFFICE DATA/GINT LOGS/INDSPEC BORING LOGS.GPJ 9 some f- subangular gravel loose (wet) 1.4 8 Olive gray-black f-c gravelly f-c SAND, some silt, compact (moist) 22 7 4 11.6 2.6 Black staining / moderate odor 7 Øij. 6.0'-8.0' 8 Olive gray-black f-c gravelly f-c SAND, some silt, less compact (wet) 4.8 Drive casing to 8.0', ream hole with roller bit 2.2 9 2 9 Ö Ø 6.7 \cdot O· 1.3 8 Ġ 10 Slight odor at 10.0' Olive gray-black f-c gravelly f-c SAND, some silt, less compact (wet) 1.9 8 1.6 9 22 9 Ö 0.8 8 Drive casing to 12.0', ream 1.4 9 hole with roller bit Olive gray and light brown-black f-c GRAVEL and f-c SAND, loose, 1.7 Minor black staining/ slight 13 some silt, trace sandstone fragments (moist) odor 12.0 - 14.0' 2.7 D. 15 SS 20 13 2.9 14 0.4 .D 11 SS Olive gray and black f-c GRAVEL and SAND, loose (wet) 8.0 2 4 ω Drive casing to 16.0', ream 1.5 hole with roller bit



Log of Boring BH-08-03 Sheet 2 of 2 Project Project No. East 2568412 1426034.79 Beazer/INDSPEC Properties Location Elevation and Datum North Petrolia, Pennsylvania 1158.945 NAVD 1988 620288.0053 Sample Data MATERIAL SYMBOL Remarks Depth Scale Number Recov. (in) Penetr. resist BL/6in Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Reading (ppm) 15 1.3 SS 4 ω 1.4 Orange-brown weathered SANDSTONE, some f-subangular gravel 12 16 and f-m sand (moist) 0.8 16 Light gray / orange-brown weathered SANDSTONE (moist) 4 6 1.3 30 17 50/3 0.7 0.8 Refusal at 17.25' Black, weathered COAL (moist) 1525 terminated boring at 0.4 End of Boring @ 18 ft Q:DATA42568401/DATA FROM PHILLY/OFFICE DATA/GINT LOGS\INDSPEC BORING LOGS.GPJ ... 11/2/2009 3:05:43 PM ... Report. Log - LANGAN ...Template LANGAN.GDT 17.25' backfilled hole with bentonite pellets 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33



BH-08-04 Sheet Log of Boring of 2 1 Project No. East Project Beazer/INDSPEC Properties 2568412 1426041.161 Location Elevation and Datum North Petrolia, Pennsylvania 1158.32119 NAVD 1988 620287.335 Date Started Drilling Agency Date Finished 3/28/08 Pennsylvania Drilling 3/28/08 Rock Depth **Drilling Equipment** Completion Depth CME 45 Track Rig 16 ft 15.4 ft Size and Type of Bit Disturbed Undisturbed Core Number of Samples 2 7/8" Roller Bit 8 NA NA Casing Diameter (in) Casing Depth (ft) Completion 24 HR. First Water Level (ft.) NA $\sqrt{}$ NA 3.5" temporary steel 16.0' Drop (in) 30" Casing Hammer Weight (lbs) Drilling Foreman 140 lbs Auto Jim Lang Sampler 2" O.D. Split Spoon Inspecting Engineer Drop (in) 30<u>"</u> Weight (lbs) Sampler Hammer 140 LBS **Bobby Huff** Sample Data MATERIAL SYMBOL Remarks Depth Number Penetr. resist BL/6in Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Type Template LANGAN.GD Scale (ppm) Start 0835 Black f-c sand f-c GRAVEL, some silt (wet) 4 -Water level 24" 3.7 -Creek flow / vol is high Light brown gravelly SILT, some f-m SAND (wet) 3 SS 5 1.7 2 Black staining / moderate odor 0' - 0.5' 1.7 Report: Log - LANGAN .. 2 4.4 Light brown f-c gravelly f-c SAND, some silt (wet) 5 4.7 7 3 α 2.1 8 \cdot Minor black staining / slight 2.3 Olive gray / black / brown gravelly f-c SAND, some silt (wet) 6 odor 2.0'-4.0' 11/2/2009 3:05:48 PM . 0905 drive casing to 4.0', ream 24 hole with roller bit Ö 1.8 Ø 6 SS 9 \cdot O \cdot 5 0.7 \bigcirc Minor black staining / Slight 1.3 7 odor 5.5' - 6.0' 6 2.3 Black f-c gravelly f-c SAND, some silt (wet) A4\2568401\DATA FROM PHILLY\OFFICE DATA\GINT LOGS\INDSPEC BORING LOGS.GPJ 8 Heavy black staining at 6.8' 4.2 Strong odor 6.0' - 8.0' 8 9 7 4 7.4 0 6.9 7 0937 drive casing to 8.0', ream 8 7.0 hole with roller bit 8 Light brown f-c gravelly f-c SAND, some silt, trace f-m sandstone 3.3 More compact 8.5' - 10.0' fragments (moist) 4 2 9 Ú. 2.8 Olive gray / black f-c gravelly f-c SAND, trace silt (moist) Some staining / slight odor 9.0' 1.7 10 - 10.0' 10 0 3.9 ((12 Black staining 10.0' - 12.0', no 1.4 13 odor 9 9 1.7 8 Ó 1020 drive casing to 12.0', 1.9 \circ 9 ream hole with roller bit Some staining/ no odor 11.5' -Ų. 2.2 Black/ dark gray f-c gravelly f-c SAND, trace silt (wet) 8 12.0' Some staining / slight odor 0.7 10 SS 12.0' - 13.5' 9 13 Ö 8.0 13 Olive gray / black / orange gravelly f-c SAND, some sandstone 0.5 12 Less staining 13.8' - 14.0', no fragments, trace silt (moist) SS 8.0 Olive gray / black f-c gravelly f-c SAND 11 8 1058 drive casing to 17.0', ω 0.2 ream hole with roller bit 16



Log of Boring BH-08-04 Sheet 2 of 2 Project No. East 1426041.161 Beazer/INDSPEC Properties 2568412 Elevation and Datum North Location Petrolia, Pennsylvania 1158.32119 NAVD 1988 620287.335 Sample Data MATERIAL SYMBOL Remarks Depth Scale PID Reading (ppm) Recov. (in)
Penetr. resist
BL/6in Number Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) 15 0.3 SS 21 8 ∞ Orange - brown weathered SANDSTONE, some f-m sand (moist) 0.5 27 0.3 End of Boring @ 16 ft 17 18 Q:DATA42568401/DATA FROM PHILLY/OFFICE DATA/GINT LOGS\INDSPEC BORING LOGS.GPJ ... 11/22009 3:05:48 PM ... Report Log - LANGAN ...Template LANGAN.GDT 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33



BH-08-05 Sheet Log of Boring of 2 1 Project No. East Project Beazer/INDSPEC Properties 2568412 1426047.636 Location Elevation and Datum North Petrolia, Pennsylvania 1158.289267 NAVD 1988 620287.753 Drilling Agency Date Started Date Finished 3/31/08 Pennsylvania Drilling 3/31/08 Rock Depth **Drilling Equipment** Completion Depth CME 45C Track Rig 16 ft 14 ft Size and Type of Bit Disturbed Undisturbed Core Number of Samples 2 7/8" Roller Bit 8 N/A N/A Casing Diameter (in) Casing Depth (ft) Completion 24 HR. First Water Level (ft.) 3.5" Temporary Steel Casing 0 NA ∇ NA 16 Casing Hammer Weight (lbs) Drop (in) Drilling Foreman 30" 140 lbs Auto Jim Lang Sampler 2" x 2' O.D. Split Spoon Inspecting Engineer Drop (in) 3<u>0"</u> Weight (lbs) Sampler Hammer 140 lbs Dennis Webster / Bobby Huff Sample Data MATERIAL SYMBOL Remarks Depth Number Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Type LANGAN.GD Scale (ppm) $\neg \tau$ 0805 Start boring Brown f-c subrounded GRAVEL, trace silt (wet) Water Level 1.7' 0.3 Brown f-c gravelly f-c SAND, some silt (wet) **Template** 2 7 8.0 4 Slight odor 1.0-2.0' 7.2 Report: Log - LANGAN .. 0 8 2 33.2 6 1.5 Drive casing to 4.0', ream hole 10 with roller bit 7 3 α Brown f gravelly f-c SAND, trace silt and sandstone fragments (wet) 2.6 9 \cdot 5.8 9 11/2/2009 3:05:52 PM .. 6.1 8 17.2 Gray-brown f-c SAND, some silt and f-c subrounded gravel (wet) 8 5 2.4 2 6 Black staining / moderate odor 1.4 Black f-c gravelly f-c SAND, some silt, trace clay (wet) 5 from 5.2 - 8.0' 6 2.1 Q:\DATA4\2568401\DATA FROM PHILLY\OFFICE DATA\GINT LOGS\INDSPEC BORING LOGS.GPJ 2.1 Ø. 2 8 7 \cdot O 4 26.5 Drive casing to 8.0', ream hole 6 with roller bit 9.2 5 8 Ö Ó 5.5 8 0 2.0 8 2 9 Black f gravelly f-m SAND, some silt and coal fragments (moist) 2.6 Ö 1.8 0 5 Black staining / odor 10 1.5 10.0'-12.0' 10 0.8 5 Ö 9 2.6 9 Drive casing to 12.0', ream 1.1 hole with roller bit 10 12 1.7 8 Black f-m SAND, some f-c subrounded gravel and silt, trace clay (wet) 8.0 8 2 SS 9 13 1.0 Drive casing to 14.0', ream -some sandstone fragments 10 hole with roller bit 0.6 \mathcal{D} 12 SS Light gray-brown f-m SANDSTONE, with interbedded coal (moist) 8.0 16 5 Background PID at 0.9 ppm ω 3.4 16



Log of Boring BH-08-05 Sheet 2 of 2 Project Project No. East 1426047.636 Beazer/INDSPEC Properties 2568412 Location Elevation and Datum North Petrolia, Pennsylvania 1158.289267 NAVD 1988 620287.753 Sample Data Remarks Depth Scale PID Reading (ppm) Number Recov. (in)
Penetr. resist
BL/6in Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) 15 1.8 SS 18 5 ∞ 1.9 12 1.1 Stop boring at 1040 at 16.0' End of Boring @ 16 ft Backfilled hole with bentonite 17 18 Q:DATA42568401/DATA FROM PHILLY/OFFICE DATA/GINT LOGS\INDSPEC BORING LOGS.GPJ ... 11/2/2009 3:05:52 PM ... Report. Log - LANGAN ...Template LANGAN.GDT 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33



BH-08-06 Sheet Log of Boring of 2 1 Project No. East Project Beazer/INDSPEC Properties 2568412 1426023.739 Location Elevation and Datum North Petrolia, Pennsylvania 1160.144563 NAVD 1988 620012.828 Date Started Drilling Agency Date Finished 3/31/08 3/31/08 Pennsylvania Drilling Rock Depth **Drilling Equipment** Completion Depth CME 45C Track Rig 15 ft 14 ft Size and Type of Bit Disturbed Undisturbed Core Number of Samples 2 7/8" Roller Bit 8 N/A N/A Casing Diameter (in) Casing Depth (ft) Completion 24 HR. First Water Level (ft.) 3.5" Temporary Steel Casing 0 NA $\sqrt{}$ NA 15 Casing Hammer Weight (lbs) Drop (in) Drilling Foreman 30" Auto 140 lbs Jim Lang Sampler 2" x 2' O.D. Split Spoon Inspecting Engineer Drop (in) 3<u>0"</u> Sampler Hammer Weight (lbs) 140 lbs Dennis Webster / Bobby Huff Sample Data MATERIAL SYMBOL Remarks Depth Number Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Type LANGAN.GD Scale (ppm) Start boring at 1320 Brown, gray, black f-c subrounded GRAVEL (wet) 3 1.5 Black staining / strong odor 3 Black f-c SAND and f-c subrounded GRAVEL, some silt (wet) 7.5 0.5'-2.0' 7.5 4 D 7.3 Report: Log - LANGAN 3 2 2.6 3 Dark black staining / odor from Black f gravelly f-c SAND, trace silt (wet) 2.0-4.0' 21.2 3 3 α 4 25.3 2 \cdot O: 15.3 Olive-brown f-gravelly f-c SAND, trace silt (wet) 3 11/2/2009 3:05:56 PM. Drive casing to 4.0', ream hole 3.2 with roller bit 3.2 5 4 2.5 Recalibrated PID at 1400 -Dark black silty f- SAND, trace clay (wet) background at 3.2 ppm 2.5 6 6 Trace black staining 5.0-6.0' 2.8 Q:\DATA4\2568401\DATA FROM PHILLY\OFFICE DATA\GINT LOGS\INDSPEC BORING LOGS.GPJ 6 3.2 Collect Env. sample 8 5 BH-08-06_5.25-5.75 at 1500 7 4 3.2 3.2 Drive casing to 8.0', ream hole 6 with roller bit Olive-gray f-c SAND, some f-gravel and silt, trace clay with 8 3.2 3 sandstone fragments (moist) \mathcal{D} Artesian conditions noted at 0 8.00' 7 2 9 0 Background PID at 0.8 ppm Ø 0 5 10 0 Increased sandstone fragments 6 1.1 6 9 1.4 Olive-gray / brown silty f-c SAND, some sandstone fragments, trace 1.2 clay (wet) 8 Drive casing to 14.0', ream 1.1 1 hole with roller bit 0 4 SS 13 0 Collect env. sample BH-08-06_13.5-14.0 at 1530 0 8 Light-gray f-m SANDSTONE 0 46 7 ω 50/3 0



Log of Boring BH-08-06 Sheet 2 of 2 Project Project No. East 1426023.739 Beazer/INDSPEC Properties 2568412 Elevation and Datum Location North Petrolia, Pennsylvania 1160.144563 NAVD 1988 620012.828 Sample Data Remarks Depth Scale Recov. (in)
Penetr. resist
BL/6in Number Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Reading (ppm) 15 0 Refusal at 14.75 End of Boring @ 15 ft 1530 - Terminated boring at 15.0' 16 Backfilled drill hole with bentonite chips 17 18 Q:DATA42568401/DATA FROM PHILLY/OFFICE DATA/GINT LOGS\INDSPEC BORING LOGS.GPJ ... 11/2/2009 3:05:56 PM ... Report. Log - LANGAN ...Template LANGAN.GDT 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33



BH-08-07 Sheet Log of Boring of 2 1 Project No. East Beazer/INDSPEC Properties 2568412 1426022.924 Location Elevation and Datum North Petrolia, Pennsylvania 1159.913042 NAVD 1988 620026.762 Date Started Drilling Agency Date Finished 4/1/08 4/1/08 Pennsylvania Drilling Rock Depth **Drilling Equipment** Completion Depth CME 45C Track Rig 15.3 ft 15 ft Size and Type of Bit Disturbed Undisturbed Core Number of Samples 2 7/8" Roller Bit 8 N/A N/A Casing Diameter (in) Casing Depth (ft) Completion 24 HR. First Water Level (ft.) 3.5" Temporary Steel Casing NA \mathbf{V} NA 15.3 Drop (in) 30" Drilling Foreman Casing Hammer Weight (lbs) 140 lbs Auto Jim Lang Sampler 2" x 2' O.D. Split Spoon Inspecting Engineer Drop (in) 3<u>0"</u> Sampler Hammer Weight (lbs) 140 lbs **Bobby Huff** Sample Data MATERIAL SYMBOL Remarks Depth Number (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Sample Description Template LANGAN.GD Scale (ppm) 0842 Start boring Black f gravelly f-c SAND loose (wet) 2 59.8 3 4 no record 4 Poor recovery \cdot no record 2 0945 - Environmental sample 2 collected BH-08-07 0.5-1.0 Black f gravelly f-c SAND loose (wet) no record 3 Black staining / moderate odor O 56.2 0.0'-2.0' 0 3 SS · Heavy staining / strong odor 3 α 9 8 2.0'-4.0' Strong odor Gray-black silty CLAY, trace f gravel and f-c sand (wet) no record 4 - Clay observed in lower 4" of Gray silty CLAY, trace f gravel and f-c sand no record 3 Poor recovery Light brown silty f-c SAND, some f gravel and large sandstone 0.3 fragments (wet) 9 SS 1000 - Collected 5 က ω 0.3 environmental sample 8 BH-08-07 3.75-4.25 0.3 0900 Drive casing to 4.0', 10 6 ream hole with roller bit Olive gray / black silty f-c SAND, some f gravel, trace orange 0.2 8 Poor recovery / clay in upper LOGS\INDSPEC BORING LOGS.GPJ sandstone fragments (wet) 2.0" of spoon 0.3 9 Some bedding in sandstone 4 7 4 0.4 sections (upper 2.0-4.0" of SS) No odor or staining 1.5 Minimal staining / slight odor 6 Light brown silty f-c SAND, some f subrounded gravel, some Collect env. sample 8 sandstone fragments (friable), (wet) 0.3 BH-08-07_6.0-6.5 at 1015 Lower 4" of spoon - light 0 brown with red mottling 6 9 2 0925 Drive casing to 8.0', Trace clay 9.0' - 10.0' 0 ream hole with roller bit \DATA FROM PHILLY\OFFICE DATA\GINT 0 9 Weathered sandstone 10 0 9.75'-10.0' Trace clay (wet) 0.2 8 4 9 0.6 0.3 6 0950 Drive casing to 12.0', 0.2 6 Increased sandstone fragments (wet) ream hole with roller bit 0.2 9 5 13 0.4 10 0.9 9 0.3 Same as above 8 9 ω 0

10



Q:DATA42568401/DATA FROM PHILLY/OFFICE DATA/GINT LOGS\INDSPEC BORING LOGS.GPJ ... 11/22009 3:06:01 PM ... Report. Log - LANGAN ...Template LANGAN.GDT

Log of Boring BH-08-07 Sheet 2 of 2 Project Project No. East 1426022.924 Beazer/INDSPEC Properties 2568412 Elevation and Datum North Location Petrolia, Pennsylvania 1159.913042 NAVD 1988 620026.762 Sample Data Remarks Depth Scale Number Recov. (in)
Penetr. resist
BL/6in Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Reading (ppm) 15 -50/3 Collect env. sample Light brown weathered sandstone (friable), (wet) ω BH-08-07_14.5-15.0 at 1040 End of Boring @ 15.3 ft 0 1003 Refusal at 15.25' 16 pulled casing and backfilled with bentonite chips 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33



BH-08-08 Sheet Log of Boring of 2 1 Project No. East Project Beazer/INDSPEC Properties 2568412 1426023.25 Location Elevation and Datum North 620018.149 Petrolia, Pennsylvania 1160.027817 NAVD 1988 Drilling Agency Date Started Date Finished 4/1/08 4/1/08 Pennsylvania Drilling **Drilling Equipment** Completion Depth Rock Depth CME 45C Track Rig 15.2 ft 14 ft Size and Type of Bit Disturbed Undisturbed Core Number of Samples 2 7/8" Roller Bit 8 N/A N/A Casing Diameter (in) Casing Depth (ft) Completion 24 HR. First Water Level (ft.) 3.5" Temporary Steel Casing NA $\sqrt{}$ NA 15.2 Drop (in) 30<u>"</u> Casing Hammer Weight (lbs) Drilling Foreman 140 lbs Auto Jim Lang Sampler 2" x 2' O.D. Split Spoon Inspecting Engineer Drop (in) 3<u>0"</u> Sampler Hammer Weight (lbs) 140 lbs **Bobby Huff** Sample Data MATERIAL SYMBOL Remarks Depth Number Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Template LANGAN.GD Scale (ppm) 1044 Start boring (near Black f gravelly f-c SAND, some silt and sandstone fragments (wet) 2 BH-06-11 (historic)) 6.5 Staff gauge water level reading 3 SS 2 Ö. 10.5 Heavy staining / moderate odor 3 \cdot 0.0'-2.0' no record 3 Log - LANGAN Poor recovery 2 Collect Env sample no record Same as above 2 BH-08-08 0.25-0.75 at Ó Heavy staining / strong odor 7.1 0 3 2.0'-3.0' 7 3 α 5.2 Silty clay in ____/bottom 6" of Gray-brown silty CLAY, some f-m sand, very soft, (wet) 0.8 spoon Drive casing to 4.0', ream hole 0.9 with roller bit 6 Gray-black silty f-c SAND, some f subrounded gravel, loose (wet) Clayey in upper 2" of split 0.3 spoon 4 SS 5 5 0 Fine black silt 5.5'-6.0' Collect env sample 0.1 11 BH-08-08_5.5-6.0 at 1135 6 0 LOGS\INDSPEC BORING LOGS.GPJ 9 0 Same as above, Gray-black-light brown (wet) 11 4 4 0.1 Fragmented sandstone 9 7.0'-7.2' 0 Drive casing to 8.0', ream hole 6 with roller bit 8 0.1 Same as above, gray - light brown (wet) sandstone fragments 0 6 4 9 2 0 2568401/DATA FROM PHILLY/OFFICE DATA/GINT 0 6 10 Same as above, gray - light brown (wet) 0 5 sandstone fragments 0 4 9 0 0 8 Drive casing to 12.0', ream 0 Same as above, gray - light brown hole with roller bit 0 6 SS 7 13 0 Bright orange sandstone frags 5 at 12.5' 0.1 Collect env. sample BH-08-08_13.5-14.0 at 1200 SS Light brown and light gray weathered SANDSTONE, soft, friable, 0 12 Weathered rock 14.0' - 15.2' (moist) 7 ω 0 Refusal at 15.2'

50



Log of Boring BH-08-08 Sheet 2 of 2 Project No. East 1426023.25 Beazer/INDSPEC Properties 2568412 Location Elevation and Datum North Petrolia, Pennsylvania 1160.027817 NAVD 1988 620018.149 Sample Data MATERIAL SYMBOL Remarks Depth Scale PID Reading (ppm) Recov. (in) Penetr. resist BL/6in Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) 15 -50/2 1151 Terminate boring at 15.2' Backfilled with bentonite chips End of Boring @ 15.2 ft 16 17 18 Q:DATA42568401/DATA FROM PHILLY/OFFICE DATA/GINT LOGS\INDSPEC BORING LOGS.GPJ ... 11/22009 3:06:05 PM ... Report Log - LANGAN ...Template LANGAN.GDT 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33



BH-08-09 Sheet Log of Boring of 1 1 Project No. East Project Beazer/INDSPEC Properties 2568412 1426038.288 Location Elevation and Datum North 1159.750038 NAVD 1988 620018.822 Petrolia, Pennsylvania Drilling Agency Date Started Date Finished 4/1/08 4/1/08 Pennsylvania Drilling **Drilling Equipment** Completion Depth Rock Depth CME 45C Track Rig 12.2 ft 11.8 ft Size and Type of Bit Disturbed Undisturbed Core Number of Samples 2 7/8" Roller Bit N/A N/A Casing Diameter (in) Casing Depth (ft) Completion 24 HR. First Water Level (ft.) 3.5" Temporary Steel Casing NA $\sqrt{}$ NA 12.2 Drop (in) 30" Drilling Foreman Casing Hammer Weight (lbs) 140 lbs Auto Jim Lang Sampler 2" x 2' O.D. Split Spoon Inspecting Engineer Drop (in) 30<u>"</u> Sampler Hammer Weight (lbs) 140 lbs **Bobby Huff** Sample Data MATERIAL SYMBOL Remarks Depth Number Penetr. resist BL/6in Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Type -ANGAN.GD Scale (ppm) 1404 Start boring Black f gravelly, f-c SAND, some silt (wet) 3 Water level approx 18" 62.2 Black staining 0-4" (smears on Gray silty CLAY, some f-c sand and f gravel, soft (moist) 3 SS 7 gloves) 140 3 Reddish color 4-6" ► Strong odor 0.0-2.0' 176 3 High PID hits in clay 2 SAA, Gray / light brown, some sandstone fragments 805 4 1420 Collect environmental 1356 sample BH-08-09 1.5-2.0 4 7 3 Strong odor 2.0 - 4.0' α 356 5 High PID hits in clay 220 1500 Collected environmental Greish brown silty f-c SAND, some f subrounded gravel, (wet) 355 sample BH-08-09_3.5-4.0 large sandstone fragments Slight odor 4.0 - 6.0' 1.9 Lower PID hits 4.0 - 6.0' 5 SS 9 5 3.7 9.5 6 6 3.3 BORING LOGS.GPJ 2.0 Collect env. sample 5 5 BH-08-09_6.5-7.0 at 1530 4 0.5 0.7 Gray silty CLAY, some f-c sand, trace f gravel, sandstone frags, soft 5 8 More silt 9.5-10.0' 0.7 Light gray silty CLAY, some f-c sand and f gravel, some sandstone 0.6 frags, medium soft (moist) 6 5 2 9 0.2 0.0 14 10 Orange brown silty f-c SAND and SANDSTONE FRAGS (moist) 0.1 8 0.2 **PHILLY/OFFICE I** 6 7 9 0.4 18 Losing sand 0.2 12 Orange brown weathered SANDSTONE 12 1500 Drive casing to 12.0' 0.0 Q:\DATA4\2568401\DATA FROM 50/2 0.0 ream hole with roller bit End of Boring @ 12.2 ft 13 Refusal at 12.2' Backfilled hole with bentonite chips



BH-08-10 Log of Boring Sheet of 2 1 Project No. East Project Beazer/INDSPEC Properties 2568412 1426031.162 Location Elevation and Datum North 620019.243 Petrolia, Pennsylvania 1159.94428 NAVD 1988 Drilling Agency Date Started Date Finished 4/2/08 4/2/08 Pennsylvania Drilling Rock Depth **Drilling Equipment** Completion Depth CME 45C Track Rig 13.8 ft 12 ft Size and Type of Bit Disturbed Undisturbed Core Number of Samples 2 7/8" Roller Bit N/A N/A Casing Diameter (in) Casing Depth (ft) Completion 24 HR. First Water Level (ft.) 3.5" Temporary Steel Casing NA $\sqrt{}$ NA 13.8 Drop (in) 30" Drilling Foreman Casing Hammer Weight (lbs) 140 lbs Auto Jim Lang Sampler 2" x 2' O.D. Split Spoon Inspecting Engineer Drop (in) 30" Sampler Hammer Weight (lbs) 140 lbs Jason Hanna / Bobby Huff Sample Data MATERIAL SYMBOL Remarks Depth Number Penetr. resist BL/6in Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Type emplate LANGAN.GD Scale (ppm) 0825 Start boring Reddish brown gravelly f-c SAND (wet) 4 Water level approx. 12" Black f-gravelly f-c SAND, some silt (wet) 12.0 5 SS Strong odor 7 Olive gray / black f-gravelly f-c SAND, some silt and sandstone 6.8 Black staining 4.0-8.0" fragments (wet) 0846 Collect env. sample 292 BH-08-10_1.5-2.0 3 Report: Log - LANGAN 2 Olive gray SILT and CLAY, some f-gravel and f-c sand, soft to 112 3 Strong odor medium soft (moist) Increased clay with depth 743 3 Intermixed gravel and SS 9 3 α 252 sandstone fragments 361 0906 Collect env. sample 3 BH-08-10_2.0-3.0 11/2/2009 3:06:13 PM 363 0850 Drive casing to 4.0' and 3 Gray-brown silty f-c SAND, some f- subrounded gravel and ream hole with roller bit 802 sandstone fragments, trace clay (wet) Ð 3 Strong odor SS 5 က 244 6 171 6 6 Brown-gray silty f-c SAND and f-subrounded GRAVEL, ome 55.8 SS Q:\DATA4\2568401\DATA FROM PHILLY\OFFICE DATA\GINT LOGS\\NDSPEC BORING LOGS\GPJ 8 sandstone fragments (wet) Weaker odor 7.9 P Lower PID hits 9 7 4 f-m grained weathered 15.2 9 sandstone fragments 5.0 6 8 0905 Drive casing to 8.0' and Gray SILT, some clay, tight, soft (moist) 12.5 3 ream hole with roller bit 9.3 0915 Drive SS 8.0-10.0' 9 2 4 4.4 More clayey 8.0-9.0' 0929 Collect geotech sample 2.7 5 9.0-10.0' 10 5.9 9 0945 Collect env. sample 0.0 Red and gray f-subangular GRAVEL (wet) 11 BH-08-10_10.5-11.0 22 9 3.0 f-gravel lens 10.85-11.0 Gray and reddish brown sandy () SILT and SANDSTONE 8 1.0 8 0920 Drive casing to 12.0', Gray fine grained weathered SANDSTONE, intermixed orange f-m 0.3 21 ream hole with roller bit silty sand (wet) 0.1 15 SS 8 13 0.0 1000 Collect env. sample 10 BH-08-10_12.0-14.0 0.2 50/4 0951 Refusal at 1.8' End of Boring @ 13.8 ft 14 0.1 0951 End boring Backfill hole with bentonite



BH-08-10 Log of Boring Sheet 2 of 2 Project Project No. East 2568412 1426031.162 Beazer/INDSPEC Properties Location Elevation and Datum North Petrolia, Pennsylvania 1159.94428 NAVD 1988 620019.243 Sample Data Remarks Depth Scale Number Recov. (in)
Penetr. resist PID Reading (ppm) Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) 15 16 17 18 Q:DATA42568401/DATA FROM PHILLY/OFFICE DATA/GINT LOGS\INDSPEC BORING LOGS.GPJ ... 11/2/2009 3:06:14 PM ... Report. Log - LANGAN ...Template LANGAN.GDT 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33



BH-08-11 Sheet Log of Boring of 1 1 Project No. East Project Beazer/INDSPEC Properties 2568412 1426037.656 Location Elevation and Datum North Petrolia, Pennsylvania 1159.979825 NAVD 1988 620037.887 Drilling Agency Date Started Date Finished 4/2/08 Pennsylvania Drilling 4/2/08 Rock Depth **Drilling Equipment** Completion Depth CME 45C Track Rig 12.2 ft 12 ft Size and Type of Bit Disturbed Undisturbed Core Number of Samples 2 7/8" Roller Bit N/A N/A Casing Diameter (in) Casing Depth (ft) Completion 24 HR. First Water Level (ft.) 0 N/A $\sqrt{}$ N/A 3.5" Temporary Steel Casing 12.2 Drop (in) 30" Drilling Foreman Casing Hammer Weight (lbs) 140 lbs Auto Jim Lang Sampler 2" x 2' O.D. Split Spoon Inspecting Engineer Drop (in) 30" Sampler Hammer Weight (lbs) 140 lbs Bobby Huff / Jason Hanna Sample Data MATERIAL SYMBOL Remarks Depth Number Penetr. resist BL/6in Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Type LANGAN.GD Scale Reading (ppm) . 1054 Start Dark brown f-c sandy f- GRAVEL (subrounded)(wet) 5 Water level ~8" Black f-gravelly f-c SAND, trace silt (wet) 3.4 3 Strong odor ω 9.1 Black from 0.4'-2.2' 3 Ö NA 2 \cdot 2 NA 1115 Collect env. sample 2 BH-08-11 2.0-2.5 Gray f-c sandy CLAY, some silt, some f-subrounded and subangular 13.9 gravel, soft (moist) 3 SS 7 3 α More clayey 2.25-3.0' 6.0 3 Picking up more sand with 6.5 depth, less clay Gray f-c sandy SILT, some f-subangular gravel and sandstone 11/2/2009 3:06:17 PM 1110 Drive casing to 4.0', fragments, some clay, soft (moist) 5.7 3 ream hole with roller bit 0.0 Drive SS 4.0-6.0' 4 5 5 0.0 Picking up increased sand / 0.7 Reddish brown f-gravelly f-c SAND, some silt and red-orange 7 gravel / sandstone frags sandstone fragments (wet) 6 0.4 PHILLY/OFFICE DATA/GINT LOGS/INDSPEC BORING LOGS.GPJ 12 Increasing sandstone 0.0 Ö. 8 fragments 6.0-8.0' 4 7 4 0.0 6 Gray clayey SILT, trace f-c sand, tight (moist) 0.0 7 8 1128 Drive casing to 8.0', 0.0 ream hole with roller bit 0.0 1136 Drive SS 8.0-10.0' 5 1145 Collect env. sample 5 9 2 0.0 BH-08-11_8.0-8.5 6 Decreasing clay with depth 0.0 7 Increasing sand and gravel 10 9.0-10.5 0.0 8 Gray-brown sitly f-c SAND and GRAVEL, some sandstone 0.0 fragments, trace clay (moist) 9 4 9 P Increasing sandstone 10 fragments with depth 11.5-12.0' 8 12 1155 Drive casing to 12.0' Red-gray WEATHERED SANDSTONE Q:\DATA4\2568401\DATA FROM ream hole with roller bit End of Boring @ 12.2 ft 1200 Refusal at 12.2' 13 1200 End boring Backfill hole with bentonite chips

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BH-08-12 Sheet Log of Boring of 2 1 Project No. East Project 1426029.66 Beazer/INDSPEC Properties 2568412 Location Elevation and Datum North 1160.10366 NAVD 1988 Petrolia, Pennsylvania 620066.1953 Drilling Agency Date Started Date Finished 4/2/08 4/3/08 Pennsylvania Drilling **Drilling Equipment** Completion Depth Rock Depth CME 45C Track Rig 16 ft N/A Size and Type of Bit Disturbed Undisturbed Core Number of Samples 2 7/8" Roller Bit 8 N/A N/A Casing Diameter (in) Casing Depth (ft) Completion 24 HR. First Water Level (ft.) 3.5" Temporary Steel Casing N/A $\sqrt{}$ N/A 16 Drilling Foreman Casing Hammer Weight (lbs) Drop (in) 30" 140 lbs Auto Jim Lang Sampler 2" x 2' O.D. Split Spoon Inspecting Engineer Drop (in) 30" Sampler Hammer Weight (lbs) 140 lbs **Bobby Huff** Sample Data MATERIAL SYMBOL Remarks Depth Number Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Type Template LANGAN.GDT Scale (ppm) 1458 Start boring Black f-gravelly f-c SAND, some silt (wet) Water level ~ 8" 2.2 Strong odor SS 4 Heavy black staining 2.0-8.0" 7 3.2 5 \cdot 4.7 Report: Log - LANGAN .. 3 2 1.9 1502 Black staining up to 2.2', 4 Gray clayey SILT, some f-c sand, race mottling, medium soft (moist) ceases at silt layer 2.0 PID readings low in silt layer 2 4 3 α 0.5 2 0.0 3 Ā 1520 Drive casing to 4.0', Gray SILT, trace m-c sand, tight, micaceous (moist) 0.0 ream hole with roller bit 11/2/2009 3:06:21 1.1 Clay decreases with depth 2 SS 7 5 1.1 Increasing sand and gravel 0.9 3 5.5-6.0' Gray black silty f-c SAND and f subrounded GRAVEL (wet) 6 Orange gravelly sand in 0.3 A4\2568401\DATA FROM PHILLY\OFFICE DATA\GINT LOGS\INDSPEC BORING LOGS.GPJ 5 bottom 2" of spoon \mathcal{D} 1.4 8 4 7 4 0.4 Increasing gravel 7.5-8.0' Ò 0.4 7 8 1530 Drive casing to 8.0', 0.0 Ö ream hole with roller bit 0.0 5 4 2 9 Gray black f-gravelly f-c SAND, some silt, trace sandstone 3.1 fragments 1.1 Laminated gray / orange fine 5 sand lense 9.85 - 10.0' 10 0 0.7 (O 2 0.3 5 7 9 0.4 Ó Picking up more sandstone 0.2 9 0 fragments 11.85-12.0' Gray-black silty f-c SAND and f GRAVEL (wet) 0.1 1545 Drive casing to 12.0', 1 ream hole with roller bit 1.1 Ð SS 4 13 1.8 9 2.2 Orange red sandstone fragments 13.5-14.0' 3 SS Stop boring at 1600 at 14.0' Olive gray-black f gravelly f-c SAND, some silt, intermixed black coal 1.7 19 and orange red sandstone fragments (moist) 5 ω 0.0 4/3/2008 13



Log of Boring BH-08-12 Sheet 2 of 2 Project Project No. East 2568412 1426029.66 Beazer/INDSPEC Properties Elevation and Datum North Location Petrolia, Pennsylvania 1160.10366 NAVD 1988 620066.1953 Sample Data MATERIAL SYMBOL Remarks Depth Scale Number Recov. (in)
Penetr. resist
BL/6in Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Reading (ppm) 15 0821 Drive SS 8 14.0-16.0' 0.0 SS 20 0838 Collect environmental 5 ∞ 0.0 sample BH-08-12_15.0-16.0 10 0825 End boring at 16.0' 0.0 End of Boring @ 16 ft Backfill hole with bentonite 17 18 Q:DATA42568401/DATA FROM PHILLY/OFFICE DATA/GINT LOGS\INDSPEC BORING LOGS.GPJ ... 11/2/2009 3:06:21 PM ... Report. Log - LANGAN ...Template LANGAN.GDT 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33



BH-08-13 Sheet Log of Boring of 2 1 Project No. East Project Beazer/INDSPEC Properties 2568412 1426037.22 North Location Elevation and Datum 1160.466544 NAVD 1988 620071.3389 Petrolia, Pennsylvania Drilling Agency Date Started Date Finished 4/3/08 4/3/08 Pennsylvania Drilling **Drilling Equipment** Completion Depth Rock Depth CME 45C Track Rig 16 ft 16 ft Size and Type of Bit Disturbed Undisturbed Core Number of Samples 2 7/8" Roller Bit 8 N/A N/A Casing Diameter (in) Casing Depth (ft) Completion 24 HR. First Water Level (ft.) 3.5" Temporary Steel Casing N/A $\sqrt{}$ N/A 16 Drilling Foreman Casing Hammer Weight (lbs) Drop (in) 30" 140 lbs Auto Jim Lang Sampler 2" x 2' O.D. Split Spoon Inspecting Engineer Drop (in) 3<u>0"</u> Sampler Hammer Weight (lbs) 140 lbs **Bobby Huff** Sample Data MATERIAL SYMBOL Remarks Depth Number Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Type Report: Log - LANGAN ...Template LANGAN.GD1 Scale (ppm) 0900 Start boring No Recovery 3 Water level ~8" N/A 5 0 Large piece of f-grained gray N/A 5 sandstone in shoe N/A 3 2 N/A Gray silty f-m SAND, some clay, c-sand and f-gravel, sandstone 4 fragments, soft, plastic (moist) 0.0 5 4 3 α 0.0 0.2 3 11/2/2009 3:06:25 PM Reddish brown silty f-c SAND and GRAVEL, sandstone fragments 0.0 8 (wet) \mathcal{D} 0.3 5 SS 5 5 1.6 Ċ 0.8 2 6 Gray-brown silty f-c SAND and GRAVEL, trace clay, sandstone 0.0 DATA4\2568401\DATA FROM PHILLY\OFFICE DATA\GINT LOGS\INDSPEC BORING LOGS.GPJ fragments (wet) 0.0 P 5 4 7 4 0.0 10 0.2 6 8 0927 Drive casing to 8.0', 0.0 5 ream hole with roller bit 0.5 Gray-brown silty f-m SAND, intermixed f-gravel and c-sand and silt More silt 8.5-8.75' (lens) ∞ 2 lenses, sandstone fragments 9 f-sand 9.5-9.75' (lens) 0.3 0.2 7 10 0.2 8 0.0 6 8 9 1008 Collect environmental 0.1 sample BH-08-13_11.5-12.0 Gray SILT, low plasticity, trace c-sand, mica (moist) 0.2 6 Gray-brown silty f-c SAND and f-GRAVEL, trace clay (wet) 0.2 Ð 0.4 6 SS 9 13 8.0 0.2 9 1015 Drive casing to 14.0', 0.5 3 ream hole with roller bit 9 Silty f-c SAND and f-GRAVEL, trace clay, micaceous (moist) ω N/A



Log of Boring BH-08-13 Sheet 2 of 2 Project Project No. East 2568412 1426037.22 Beazer/INDSPEC Properties Location Elevation and Datum North Petrolia, Pennsylvania 1160.466544 NAVD 1988 620071.3389 Sample Data Remarks Depth Scale Recov. (in)
Penetr. resist
BL/6in Number Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Reading (ppm) 15 N/A Poor recovery SS Very hard sandstone in shoe 9 ∞ (15.85-16.0') Micaceous, friable, gray highly weathered fine grained SANDSTONE 0.4 6 Micaceous 0.6 End of Boring @ 16 ft 1020 Collect environmental sample BH-08-13_15.5-16.0 17 1015 End boring at 16.0' Backfill hole with bentonite chips 18 Q:DATA42568401/DATA FROM PHILLY/OFFICE DATA/GINT LOGS\INDSPEC BORING LOGS.GPJ ... 11/2/2009 3:06:25 PM ... Report. Log - LANGAN ...Template LANGAN.GDT 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33



BH-08-14 Sheet Log of Boring of 1 1 Project No. East Project Beazer/INDSPEC Properties 2568412 1426026.568 Location Elevation and Datum North Petrolia, Pennsylvania 1159.937054 NAVD 1988 619994.133 Drilling Agency Date Started Date Finished 4/3/08 4/3/08 Pennsylvania Drilling Rock Depth **Drilling Equipment** Completion Depth CME 45C Track Rig 12.8 ft 12.4 ft Size and Type of Bit Disturbed Undisturbed Core Number of Samples 2 7/8" Roller Bit N/A N/A Casing Diameter (in) Casing Depth (ft) Completion 24 HR. First Water Level (ft.) 3.5" Temporary Steel Casing N/A $\sqrt{}$ N/A 12.8 Drop (in) 30" Casing Hammer Weight (lbs) Drilling Foreman 140 lbs Auto Jim Lang Sampler 2" x 2' O.D. Split Spoon Inspecting Engineer Drop (in) 30" Sampler Hammer Weight (lbs) 140 lbs **Bobby Huff** Sample Data MATERIAL SYMBOL Remarks Depth Number Penetr. resist BL/6in Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Type Template LANGAN.GD Scale (ppm) 1055 Start boring Gray-brown / black silty f-c SAND and GRAVEL 6 Water level ~18" at hole 38.4 Strong odor 0.0-2.0' P 5 SS Black staining 3-5" 7 203 1130 Collect environmental 5 sample BH-08-14_1.5-2.0 Ò 182 Report: Log - LANGAN .. 3 2 high plasticity silt in shoe (high NO RECOVERY AFTER MULTIPLE RECOVERY ATTEMPTS 926 PID hits) Large rock lodged in S.S. shoe, poor recovery 2.0-4.0' 3 . M4/2/2009 3:06:29 PM 1116 Sheen noted in Gray clayey SILT, tight micaceous (moist) 2 reamwater trough 579 Drive casing to 4.0', ream hole 3 SS with roller bit 5 5 384 Strong odor 4.0-6.0' 3 Bottom 2" of spoon - gravelly / 244 7 sandy Gray-brown-black silty f-c SAND and f- GRAVEL, silt lenses (clayey) 6 1145 Collect environmental 84.0 SS Q:\DATA4\2568401\DATA FROM PHILLY\OFFICE DATA\GINT LOGS\INDSPEC BORING LOGS.GPJ (wet) 5 sample BH-08-14 6.0-6.5 8 93.6 Brown f-sandy silt lense 5 7 7.0-7.2 7 4 54.6 Strong odor Gravelly throughout 34.9 4 Gray clayey silt in lower 2" of Gray clayey SILT, some f-c sand and f-c gravel, sandstone 8 spoon (7.85-8.0') 34.3 fragments, tight (moist) Orange f-m sand 8.0-8.25' 94.5 Strong odor 8.0-10.0' 5 7 2 9 50.4 37.5 5 10 1200 Collect environmental 18.1 sample BH-08-14_10.5-11.0 32.2 SAA, grading into bedrock (increased coarse material) 5 5 9 112 1200 Break for lunch Orange-red-gray highly weathered SANDSTONE and loose f-c 18.7 30 SAND, some silt and clay (moist) 12 23.2 43 SS 9 Weathered fine grained SANDSTONE 0.4 50/4 1335 Refusal at 12.8' End of Boring @ 12.8 ft 13 0.4 End boring at 12.8' Backfilled hole with bentonite chips

15



BH-08-15 Sheet Log of Boring of 1 1 Project No. East Project Beazer/INDSPEC Properties 2568412 1426030.689 Location Elevation and Datum North 619994.239 Petrolia, Pennsylvania 1159.771594 NAVD 1988 Drilling Agency Date Started Date Finished 4/3/08 4/3/08 Pennsylvania Drilling **Drilling Equipment** Completion Depth Rock Depth CME 45C Track Rig 10.8 ft 10 ft Size and Type of Bit Disturbed Undisturbed Core Number of Samples 2 7/8" Roller Bit 6 N/A N/A Casing Diameter (in) Casing Depth (ft) Completion 24 HR. First Water Level (ft.) 3.5" Temporary Steel Casing N/A $\sqrt{}$ N/A 10.8 Drop (in) 30" Casing Hammer Weight (lbs) Drilling Foreman 140 lbs Auto Jim Lang Sampler 2" x 2' O.D. Split Spoon Inspecting Engineer Drop (in) 30" Sampler Hammer Weight (lbs) 140 lbs **Bobby Huff** Sample Data MATERIAL SYMBOL Remarks Depth Number Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Template LANGAN.GD Scale (ppm) 1438 Start boring Black-gray f-c SAND and GRAVEL, some sandstone fragments and 3 silt (wet) 16.9 P 3 Heavy staining / Strong odor 419 0.0-2.0 5 N/A Report: Log - LANGAN 2 N/A Sand grading out with depth Gray-brown clayey SILT, some m-c sand and sandstone fragments 2 Very strong odor 2.0-4.0' (moist) 924 9 3 α 266 3 323 3 ... 11/2/2009 3:06:32 PM . 1st attempt - no recovery SAA (very poor recovery) 427 3 2nd attempt (push) - 1" N/A recovery 5 5 N/A N/A 6 6 SAA, some well rounded c-gravel observed (wet) N/A SS Q:\DATA4\2568401\DATA FROM PHILLY\OFFICE DATA\GINT LOGS\INDSPEC BORING LOGS.GPJ . 6 Very strong odor 6.0-8.0' 96 7 4 9 158 Poor recovery 6.0-8.0' (mostly slough) N/A 6 8 Orange brown SILT and f-c SAND, grading to reddish brown / gray 1515 Black droplets observed N/A 6 in trough after reaming hole to sandstone (highly weathered, fine grained) (moist) 32.4 8 2 9 9 11.9 Strong odor N/A 19 10 SS N/A Orange brown / gray f-grained weathered SANDSTONE (wet) 19 9 9 0.1 50/4 1530 Refusal at 10.8 End of Boring @ 10.8 ft 11 4.5 Backfilled hole with bentonite 12 No samples collected 4/3/008 Odor very strong throughout 13 LNAPL droplets in rheem tub Potential high permeability f round gravel 4.0-8.0' (poor recovery, high PIDs / odor)



BH-08-16 Log of Boring Sheet of 2 1 Project No. East Project Beazer/INDSPEC Properties 2568412 1426035.73 Location Elevation and Datum North 1159.300072 NAVD 1988 Petrolia, Pennsylvania 620218.9135 Drilling Agency Date Started Date Finished 4/7/08 Pennsylvania Drilling 4/7/08 **Drilling Equipment** Completion Depth Rock Depth CME 45C Track Rig 16 ft N/A Size and Type of Bit Disturbed Undisturbed Core Number of Samples 2 7/8" Roller Bit 8 N/A N/A Casing Diameter (in) Casing Depth (ft) Completion 24 HR. First Water Level (ft.) 0 N/A $\sqrt{}$ N/A 3.5" Temporary Steel Casing 16 Casing Hammer Weight (lbs) Drop (in) Drilling Foreman 30" Auto 140 lbs Jim Lang Sampler 2" x 2' O.D. Split Spoon Inspecting Engineer Drop (in) 30" Sampler Hammer Weight (lbs) 140 lbs **Bobby Huff** Sample Data MATERIAL SYMBOL Remarks Depth Number (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Sample Description Type LANGAN.GD Scale (ppm) Black silty f-c SAND, some f-subrounded gravel 0830 Mobilized to hot well area Orange brown silty f-m SAND, some c-sand and f-subrounded 31.5 gravel (moist) 7 SS 0907 Start boring 9 25.5 -sheen observed on water 8 exiting spoon 7.6 -strong odor at surface 9 -black staining 0-2" 2 11.8 12 Some staining / Slight odor Olive gray-black silty f-c SAND, some f-subrounded gravel, trace red 2.0-4.0' mottling (wet) 6.5 12 4 3 α 7.5 11 10.6 9 11/2/2009 3:06:36 PM 0925 Drove casing to 4.0', 6.7 11 ream hole with roller bit 7.1 Distinct color change at 4.5' Black silty f-c SAND and f-GRAVEL, loose (wet) 11 Brownish gray to black 5 6 9.8 Slight odor 4.0-6.0' 9 D 6.2 9 6 4.5 68401/DATA FROM PHILLY/OFFICE DATA/GINT LOGS/INDSPEC BORING LOGS.GPJ SAA 2.5 9 9 7 Ö 4 9.5 9 Fractured stone at 7.5' Gray-black soft silt in shoe at 6.3 8 Ø 8 2.8 1000 Drive casing to 8.0', 6 Olive gray-black-reddish brown silty f-c SAND and f- GRAVEL, ream hole with roller bit some orange red sandstone fragments (wet) 3.9 D 5 9 2 3.1 9.4 6 D 10 Black silty f-m SAND, some c-sand and f-subrounded gravel, some 6.0 6 sandstone fragments, loose (wet) Staining / slight odor 2.5 8 10.0-12.0' 9 9 6.0 10 2.8 11 1025 Drive casing to 12.0', 1.7 6 Gray-black silty f-c SAND, some f-gravel and sandstone fragments, ream hole with roller bit loose (wet) 1.7 9 SS 9 13 1.3 Lower PID hits 12.0-14.0' 10 No odor 1.8 12 SS 2.1 10 Grading to sand and Gray-black silty f-c SAND, some f-subrounded gravel and f-m 16 ω red-orange sandstone grained red-orange sandstone fragments 1.7 10 14.0-16.0



Log of Boring BH-08-16 Sheet 2 of 2 Project Project No. East 1426035.73 Beazer/INDSPEC Properties 2568412 Location Elevation and Datum North Petrolia, Pennsylvania 1159.300072 NAVD 1988 620218.9135 Sample Data Remarks Depth Scale PID Reading (ppm) Number Recov. (in)
Penetr. resist
BL/6in Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) 15 1.1 SS 14 16 ∞ 1.7 18 1.3 1045 END BORING at 16.0' End of Boring @ 16 ft Backfill hole with bentonite chips 17 18 Q:DATA42568401/DATA FROM PHILLY/OFFICE DATA/GINT LOGS\INDSPEC BORING LOGS.GPJ ... 11/2/2009 3:06:36 PM ... Report. Log - LANGAN ...Template LANGAN.GDT 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33



Log of Boring BH-08-17 Sheet of 2 1 Project No. East Project Beazer/INDSPEC Properties 2568412 1426044.44 Location Elevation and Datum North 1158.90032 NAVD 1988 Petrolia, Pennsylvania 620218.3344 Drilling Agency Date Started Date Finished 4/7/08 4/7/08 Pennsylvania Drilling **Drilling Equipment** Completion Depth Rock Depth CME 45C Track Rig 15.5 ft 15 ft Size and Type of Bit Disturbed Undisturbed Core Number of Samples 2 7/8" Roller Bit 8 N/A N/A Casing Diameter (in) Casing Depth (ft) Completion 24 HR. First Water Level (ft.) 3.5" Temporary Steel Casing 0 N/A $\sqrt{}$ N/A 15.5 Drop (in) 30" Drilling Foreman Casing Hammer Weight (lbs) 140 lbs Auto Jim Lang Sampler 2" x 2' O.D. Split Spoon Inspecting Engineer Drop (in) 30" Sampler Hammer Weight (lbs) 140 lbs **Bobby Huff** Sample Data MATERIAL SYMBOL Remarks Depth Number Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Type Report: Log - LANGAN ... Template LANGAN.GDT Scale (ppm) Black silty f-c SAND and f-GRAVEL, some gray sandstone 6 Start 1127 fragments (wet) Black staining / moderate odor 4.1 P SS 4 / slight sheening 0.0-2.0' 11.6 5 Ė 7.1 6 2 No odor / lower PID readings 7.1 Orange-Brown/Black silty f-c SAND and f-GRAVEL, some orange 9 2.0-4.0 f-grained sandstone fragments (wet) 3.1 4 3 α 3.5 9 3.9 9 . 11/2/2009 3:06:40 PM .. 1135 Drive casing to 4.0' 3.6 P 1140 Break for lunch Olive gray/black silty f-c SAND and f-GRAVEL, some sandstone 2.7 1250 Return-ream hole with fragments (wet) 10 SS 9 roller bit to 4.0' 5 2.4 Ð 1305 Drive SS 4.0-6.0' 13.8 7 6 D SAA, olive gray 9.8 LOGS\INDSPEC BORING LOGS.GPJ. 4.9 5 \circ 4 1.9 Orange mottling at 7.5' 2.2 5 8 1320 Drive casing to 8.0', Black gravelly f-c SAND (wet) 4.1 5 rheam hole with roller bit 11.2 3 Dark black staining above silt Dark gray SILT, some clay, soft (wet) 5 2 9 2.6 5 layer at 9.0' Olive gray-black f-c SAND and GRAVEL, (wet) Silt lens 8.75-9.25' 568401/DATA FROM PHILLY/OFFICE DATA/GINT 10.5 7 10 Gray-black silty f-m SAND, some c-sand and f-gravel, loose (wet) 6.8 12.0 11 8 9 Grading to coarser sand and 2.02.2 11 gravel / sandstone frags 1.5 13 SAA 6 7 5 13 8 15 SS Brown to reddish brown f-c SAND and f-GRAVEL 12 16 ω 18



Log of Boring BH-08-17 Sheet 2 of 2 Project Project No. East Beazer/INDSPEC Properties 1426044.44 2568412 Location Elevation and Datum North Petrolia, Pennsylvania 1158.90032 NAVD 1988 620218.3344 Sample Data Remarks Depth Scale PID Reading (ppm) Number Recov. (in)
Penetr. resist
BL/6in Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) 15 -50/3 Weathered SANDSTONE 15 - 15.5' (dry) ω 1358 - END BORING @ 15.5' End of Boring @ 15.5 ft **REFUSAL** 16 17 18 Q:DATA42568401/DATA FROM PHILLY/OFFICE DATA/GINT LOGS\INDSPEC BORING LOGS.GPJ ... 11/22009 3:06:40 PM ... Report. Log - LANGAN ...Template LANGAN.GDT 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33



BH-08-18 Sheet Log of Boring of 2 1 Project No. East Project Beazer/INDSPEC Properties 2568412 1426042.49 Location Elevation and Datum North 1159.553899 NAVD 1988 620188.6262 Petrolia, Pennsylvania Drilling Agency Date Started Date Finished 4/7/08 4/7/08 Pennsylvania Drilling **Drilling Equipment** Completion Depth Rock Depth 16 ft CME 45C Track Rig N/A Size and Type of Bit Disturbed Undisturbed Core Number of Samples 2 7/8" Roller Bit 8 N/A N/A Casing Diameter (in) Casing Depth (ft) Completion 24 HR. First Water Level (ft.) 3.5" Temporary Steel Casing N/A $\sqrt{}$ N/A 16 Drilling Foreman Casing Hammer Weight (lbs) Drop (in) 30" 140 lbs Auto Jim Lang Sampler 2" x 2' O.D. Split Spoon Inspecting Engineer Drop (in) 3<u>0"</u> Sampler Hammer Weight (lbs) 140 lbs **Bobby Huff** Sample Data MATERIAL SYMBOL Remarks Depth Number Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Type . Report: Log - LANGAN ...Template LANGAN.GD Scale Reading (ppm) No Recovery 3 No recovery 0.0-2.0', large sandstone frag. lodged in SS SS 4 0 3 6 2 Very slight odor 2.0-4.0' Dark gray / black silty f-c SAND and f-subrounded and subangular GRAVEL, some sandstone fragments (wet) 3.7 Ð SS 9 3 α 3.3 8 4.4 6 11/2/2009 3:06:44 PM. Drive casing to 4.0', ream hole SAA 5.0 11 with roller bit D 3.7 1457 Drive spoon 4.0-6.0' 13 5 2 3" soft f-m sandy silt lens at 5.5 12 \mathcal{D} 5.0' 14.3 1505 Collect 10 Black gray silty f-m SAND, some c-sand and f-gravel (wet) BH-08-18 5.5-6.0 6 11.8 Increasing f-m sand to c-sand (DATA4/2568401/DATA FROM PHILLY/OFFICE DATA/GINT LOGS/INDSPEC BORING LOGS.GPJ 3 D 6.0-8.0 7.8 SS 5 4 7 4 Olive gray - black gravelly f-c SAND, some silt and sandstone 2.4 8 fragments (wet) 3.7 6 8 11.8 3 3.9 SAA 5 9 2 5.1 11 Olive gray-black silty f-c SAND and GRAVEL, some orange-gray 3.1 13 sandstone fragments (wet) 10 3.7 9 3.4 11 9 Dark black silty f-m sand in 3.2 11 shoe 6.4 1525 Drive casing to 12.0', 10 ream hole with roller bit 1.6 Dark gray-black silty f-c SAND, some f-gravel and sandstone 9 fragments (wet) 1.9 10 SS 9 13 1.5 17 1.5 recorded 16 SS Dark gray-black f-c SAND and f-GRAVEL, grading to weathered 1.4 12 sandstone fragments (red-orange) with some f-c oreance sand and ω 1.3 f-gravel and silt ŏ 16



Log of Boring BH-08-18 Sheet 2 of 2 Project Project No. East 1426042.49 Beazer/INDSPEC Properties 2568412 Location Elevation and Datum North Petrolia, Pennsylvania 1159.553899 NAVD 1988 620188.6262 Sample Data Remarks Depth Scale Number PID Reading (ppm) Recov. (in)
Penetr. resist
BL/6in Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) 15 1.5 SS 16 ∞ 2.2 \mathcal{D} 11 1552 END BORING @ 16.0' 1.8 End of Boring @ 16 ft (Refusal) 17 18 Q:DATA42568401/DATA FROM PHILLY/OFFICE DATA/GINT LOGS\INDSPEC BORING LOGS.GPJ ... 11/22009 3:06:45 PM ... Report Log - LANGAN ...Template LANGAN.GDT 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33



BH-08-19 Sheet Log of Boring of 2 1 Project No. East Project Beazer/INDSPEC Properties 2568412 1426034.07 Location Elevation and Datum North Petrolia, Pennsylvania 1159.636793 NAVD 1988 620189.6899 Drilling Agency Date Started Date Finished 4/8/08 Pennsylvania Drilling 4/8/08 Rock Depth **Drilling Equipment** Completion Depth CME 45C Track Rig 18 ft 17.8 ft Size and Type of Bit Disturbed Undisturbed Core Number of Samples 2 7/8" Roller Bit 9 N/A N/A Casing Diameter (in) Casing Depth (ft) Completion 24 HR. First Water Level (ft.) 0 N/A $\sqrt{}$ N/A 3.5" Temporary Steel Casing 18 Casing Hammer Weight (lbs) Drop (in) Drilling Foreman 30" 140 lbs Auto Jim Lang Sampler 2" x 2' O.D. Split Spoon Inspecting Engineer Drop (in) 30<u>"</u> Sampler Hammer Weight (lbs) 140 lbs Bobby Huff / Kristen Ward Sample Data MATERIAL SYMBOL Remarks Depth Number Penetr. resist BL/6in Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Type Template LANGAN.GD Scale (ppm) 0834 Start boring 0-1' Black gravelly f-c SAND, some silty, loose (wet) 5 Staining/ slight odor / slight 41.4 sheen 0.0-1.0' 7 5 Olive-gray silty f-m SAND, some c-sand and f-subrounded gravel 25 4 and sandstone fragments (wet) 20.7 Report: Log - LANGAN 7 2 4.6 Staining / slight odor 2.0-4.0' Olive gray/black gravelly f-c SAND, some silty and sandstone 6 fragments (wet) 9.3 9 SS 7 3 α 7.0 8 \cdot 11.4 Dark black stain in silty sand in 5 shoe 11/2/2009 3:06:49 PM SAA 10.6 11 0850 Drive casing to 4.0', ream hole with roller bit 7.9 8 Dark gray silty f-m SAND, trace c-sand and gravel, loose (wet) SS 5 20 Sweet odor 4.0-6.0' 5.3 16.5 12 6 Dark gray soft silt lens ~1" Dark gray/black gravelly f-c SAND, some silt and sandstone 18.6 SS DATA4/2568401/DATA FROM PHILLY/OFFICE DATA/GINT LOGS/INDSPEC BORING LOGS.GPJ fragments, loose (wet) 8.4 8 5 7 4 7.7 Some staining / slight sweet ö 6 odor 6.0-8.0' \cdot O 10.3 4 8 0915 Drive casing to 8.0', Dark gray/black gravelly f-c SAND, some silty and brown-orange 3.6 11 rheem hole to 8.0' sandstone fragments, trace red mottling at 9.5' O 6.9 . O 12 2 9 Some staining / slight sweet 7.9 15 odor 8.0-10.0' 19.2 15 Ø 10 7.1 Slight odor 10.0-11.0' , O Dark gray-black f-c SAND and f-GRAVEL, some sandstone and silt 15 No odor 11.0-12.0' (wet) 13.0 12 9 9 12.2 12 o. ·O: Darker black 11.0-12.0' 6.3 12 12 0931 Drive casing to 12.0', 4.8 SAA 5 ream hole with roller bit 1.4 Some staining 12.0-14.0' Ö. 23 9 13 Black f-c silty SAND and light brown weathered sandstone, dense 1.3 24 1.0 15 SS Dark gray-black f-c SAND, some f-gravel and orange brown 2.5 12 sandstone fragments (wet) 8 ω Trace red to red-black shale 2.8 15 chips at 14.5'



Log of Boring BH-08-19 Sheet 2 of 2 Project Project No. East 1426034.07 Beazer/INDSPEC Properties 2568412 Elevation and Datum Location North Petrolia, Pennsylvania 1159.636793 NAVD 1988 620189.6899 Sample Data Remarks Depth Scale Number Recov. (in) Penetr. resist BL/6in Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Reading (ppm) 15 4.5 SS 16 8 ∞ 7.3 16 16 SAA 3.9 18 1.7 11 16 17 6 2.0 9 2.3 Gray-brown f-m SAND, some silt (wet) 20 Tan orange highly weathered MUDSTONE friable End of Boring @ 18 ft fine grained, very Tag top of bedrock 1015 END BORING at 18.0' 1.0 Q:DATA42568401/DATA FROM PHILLY/OFFICE DATA/GINT LOGS\INDSPEC BORING LOGS.GPJ ... 11/22009 3:06:49 PM ... Report Log - LANGAN ...Template LANGAN.GDT (Refusal) 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33



BH-08-20 Sheet Log of Boring of 2 1 ENGINEERING & ENVIRONMENTAL SERVICES Project No. East Project Beazer/INDSPEC Properties 2568412 1426034.68 Location Elevation and Datum North Petrolia, Pennsylvania 1159.627662 NAVD 1988 620143.4957 Drilling Agency Date Started Date Finished 4/8/08 4/8/08 Pennsylvania Drilling **Drilling Equipment** Completion Depth Rock Depth CME 45C Track Rig 18 ft 15 ft Size and Type of Bit Disturbed Undisturbed Core Number of Samples 2 7/8" Roller Bit 9 N/A N/A Casing Diameter (in) Casing Depth (ft) Completion 24 HR. First Water Level (ft.) 3.5" Temporary Steel Casing 0 N/A \mathbf{V} N/A 18 Casing Hammer Weight (lbs) Drop (in) Drilling Foreman 30" 140 lbs Auto Jim Lang Sampler 2" x 2' O.D. Split Spoon Inspecting Engineer Drop (in) 3<u>0"</u> Weight (lbs) Sampler Hammer 140 lbs Bobby Huff / Kristen Ward Sample Data MATERIAL SYMBOL Remarks Depth Number Penetr. resist BL/6in Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Type ANGAN.GD Scale (ppm) 1125 Start boring Dark black f-c sandy f-GRAVEL, loose (wet) 3 57.6 Dark black staining 0.0-1.0' 3 SS Strong odor / Slight sheen 9 Dark gray-black gravelly f-c SAND, some silt (wet) 104 0.0-2.0 4 25.2 3 Report: Log - LANGAN 2 Black staining / slight odor Dark gray/olive gray silty f-c SAND and GRAVEL, some orange 6 1420 Collect env sample sandstone fragments 17.1 P BH-08-20_0.0-2.0 6 SS 5 -increasing silt with depth 3 α 12.1 5 18.2 Brown-gray-black silty f-c SAND, some subrounded gravel and 1132 Drive casing to 4.0', 13.6 11 f-grained sandstone fragments (wet) ream hole with roller bit 23.9 7 SS 5 5 Slight staining 4.0-6.0' 6.2 8 7.9 10 6 Poor recovery 6.0-8.0' SAA 6.5 SS DATA4\2568401\DATA FROM PHILLY\OFFICE DATA\GINT LOGS\INDSPEC BORING LOGS.GPJ 12 3.0 6 7 4 ω 2.7 Lost sample, No picture (open 12 spoon fell into creek) 9 8 1153 Drive casing to 8.0', Grav-black silty f-c SAND and GRAVEL, some brown sandstone 6 ream hole with roller bit fragments 15.0 :0 1200 Break for lunch 10 1320 Resume boring 4 2 9 6.6 SS-5 sample picture before lid 6.6 8 Staining / Slight odor 8.0-10.0' 10 Dark black staining / slight Black silty f-c SAND and f-GRAVEL 6.9 odor 10.0-12.0' Ö 1.3 9 7 9 1.8 Ø 0.8 8 1335 Drive casing to 12.0', 0.5 SAA 9 rheem hole to 12.0' 5.9 12 SS 9 13 1.4 Staining/ strong odor Ð 12 12.0-13.0' 3.0 15 SS Black f-m SAND, some silt, trace f-gravel 0.5 8 Staining / slight odor 16 ω 14.0-16.0' 4.6



Log of Boring BH-08-20 Sheet 2 of 2 Project No. East 1426034.68 Beazer/INDSPEC Properties 2568412 Elevation and Datum North Location Petrolia, Pennsylvania 1159.627662 NAVD 1988 620143.4957 Sample Data Remarks Depth Scale Number Penetr. resist BL/6in Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Reading (ppm) 15 2.1 Light brown weathered SANDSTONE, some f-c sand and gravel SS 14 16 ω 5.6 20 16 Minor staining/ no odor Highly weathered SANDSTONE, some f-c sand and gravel (wet) 2.0 12 16.0-18.0' 2.8 13 12 17 6 2.4 13 2.1 15 1410 END BORING @ 18.0' 1.2 End of Boring @ 18 ft Q:DATA42568401/DATA FROM PHILLY/OFFICE DATA/GINT LOGS\INDSPEC BORING LOGS.GPJ ... 11/2/2009 3:06:53 PM ... Report. Log - LANGAN ...Template LANGAN.GDT (Refusal) 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33



BH-08-21 Sheet Log of Boring of 2 1 Project No. East Project Beazer/INDSPEC Properties 2568412 1426041.92 Location Elevation and Datum North 1160.176839 NAVD 1988 Petrolia, Pennsylvania 620144.2135 Drilling Agency Date Started Date Finished 4/8/08 4/8/08 Pennsylvania Drilling **Drilling Equipment** Completion Depth Rock Depth CME 45C Track Rig 18 ft 16 ft Size and Type of Bit Disturbed Undisturbed Core Number of Samples 2 7/8" Roller Bit 9 N/A N/A Casing Diameter (in) Casing Depth (ft) Completion 24 HR. First Water Level (ft.) 3.5" Temporary Steel Casing 0 N/A \mathbf{V} N/A 18 Drilling Foreman Casing Hammer Weight (lbs) Drop (in) 30" 140 lbs Auto Jim Lang Sampler 2" x 2' O.D. Split Spoon Inspecting Engineer Drop (in) 30<u>"</u> Sampler Hammer Weight (lbs) 140 lbs Bobby Huff / Kristen Ward Sample Data MATERIAL SYMBOL Remarks Depth PID Number Penetr. resist BL/6in Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Type Template LANGAN.GD Scale Reading (ppm) 1445 Start boring Black silty f-c SAND and GRAVEL, (wet) 25.4 Black staining / Strong odor 41 P 0.0-1.0 2 SS 9 14 2 Gray-brown f-c sandy SILT, some f-gravel (wet) 8 Report: Log - LANGAN . 3 2 5.7 Black staining 2.0-4.0' 4 10 Black f-gravelly f-c SAND, some silt (moist) 5 SS 9 3 α 9.1 6 11.5 6 11/2/2009 3:06:57 PM 1300 Drive casing to 4.0', Black silty f-c SAND and GRAVEL (wet) 7.9 -more silt 5.5-6.0' ream hole with roller bit Black staining / strong odor \mathcal{D} 5.7 7 SS 4.0-6.0' 5 က 6.4 1615 Collect env. sample 8 BH-08-21_4.0-6.0 Ò 28.1 7 6 Black staining / slight odor 31.3 SAA DATA4\2568401\DATA FROM PHILLY\OFFICE DATA\GINT LOGS\INDSPEC BORING LOGS.GPJ 6.0-8.0 Ò -sandstone fragments and red mottling 7.0-8.0' 8.0 8 SS 4 7 4 9.9 Ø 5.6 11 8 1520 Drive casing to 8.0', 4.1 SAA 10 ream with roller bit 1.5 8 Some black staining / no odor 9 2 9 1.6 8.0-10.0' \mathcal{D} 10 1.2 11 10 Black staining / slight odor Black-dark gray f-c sandy f-gravelly SILT, soft (wet) 2.6 12 10.0-12.0 1.9 12 7.5 9 0.6 9 0.6 0 11 1540 Drive casing to 12.0', 0.7 Dark gray-black f-c SAND and GRAVEL, some silt 8 ream with roller bit 1.3 Ð Iron reduction staining present 11 SS 13 2.4 Black staining / strong odor 11 12.0-14.0' 3.1 10 1600 Collect env. sample SS 1.7 BH-08-21_13.5-14.0 10 ω Black staining / slight odor SAA 6.3 13

14.0-16.0'



Log of Boring BH-08-21 Sheet 2 of 2 Project Project No. East 1426041.92 Beazer/INDSPEC Properties 2568412 Elevation and Datum Location North Petrolia, Pennsylvania 1160.176839 NAVD 1988 620144.2135 Sample Data Remarks Depth Scale Number Penetr. resist BL/6in Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Reading (ppm) 15 5.9 -increasing sandstone fragments with depth SS 13 ω 2.4 15 16 Black staining / No odor Tan highly weathered SANDSTONE, some f-c sand and gravel (wet) 3.8 13 16.0-18.0' 4.5 12 17 6 ω 4.3 8 3.2 5 3.2 1609 END BORING @ 18.0' End of Boring @ 18 ft Q:DATA42568401/DATA FROM PHILLY/OFFICE DATA/GINT LOGS\INDSPEC BORING LOGS.GPJ ... 11/22009 3:06:58 PM ... Report Log - LANGAN ...Template LANGAN.GDT (Refusal) 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33



BH-08-22 Sheet Log of Boring of 2 1 Project No. East Project Beazer/INDSPEC Properties 2568412 1426037.94 Location Elevation and Datum North Petrolia, Pennsylvania 1159.926532 NAVD 1988 620115.8318 Drilling Agency Date Started Date Finished 4/9/08 4/9/08 Pennsylvania Drilling **Drilling Equipment** Completion Depth Rock Depth CME 45C Track Rig 18 ft 17 ft Size and Type of Bit Disturbed Undisturbed Core Number of Samples 2 7/8" Roller Bit 9 N/A N/A Casing Diameter (in) Casing Depth (ft) Completion 24 HR. First Water Level (ft.) 3.5" Temporary Steel Casing 0 N/A \mathbf{V} N/A 18 Casing Hammer Weight (lbs) Drop (in) Drilling Foreman 30" 140 lbs Auto Jim Lang Sampler 2" x 2' O.D. Split Spoon Inspecting Engineer Drop (in) 30<u>"</u> Weight (lbs) Sampler Hammer 140 lbs Bobby Huff / Kristen Ward Sample Data MATERIAL SYMBOL Remarks Depth Number Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Type emplate LANGAN.GD Scale (ppm) 0828 Start boring Brick fragments No staining / Slight odor Dark gray f-c gravelly SILT, some f-c sand (wet) 2.1 0.0-2.0' 7 4 4 q Report: Log - LANGAN 2 Strong sweet odor Olive gray f-c SAND, some silty and f-subangular and subrounded 5 gravel (wet) 58.5 Đ 8 SS 3 α 0 1030 Collect env. sample 32.5 5 BH-08-22_3.0-4.0 129 3 11/2/2009 3:07:02 PM 0838 Drive casing to 4.0', Brown silty f-c SAND, some f-c gravel 362 5 ream hole with roller bit 64.7 7 SS 9 5 Strong odor 4.0-5.0' in the 17.8 Brown silty f-c SAND, some sandstone fragments, compact 11 brown sand 8.6 9 6 Black staining Brown gray f-c SAND and SANDSTONE fragments, some gravel 8.2 DATA4\2568401\DATA FROM PHILLY\OFFICE DATA\GINT LOGS\INDSPEC BORING LOGS.GPJ 18 (wet) 12.6 P 13 7 7 4 5.4 ε 9.2 7 8 0925 Drive casing to 8.0', 11.3 SAA 5 ream hole with roller bit Ð 2.3 Black staining 5 No odor 9 9 2 2.4 Q 1.2 5 10 SAA 1.2 5 Ø Black staining 1.2 5 No odor 3 9 2.1 Dark gray m-SAND, some silt Dark brown f-c SAND and weathered SANDSTONE fragments 1.0 7 0940 Drive casing to 12.0', 1.7 \mathcal{D} SAA with some gravel ream hole with roller bit 1.2 12 SS 9 13 2.5 14 2.7 14 SS Light brown highly weathered SANDSTONE and f-c sand and silt 1.5 15 Minor staining 4 ω No odor 1.2 14



Log of Boring BH-08-22 Sheet 2 of 2 Project Project No. East 1426037.94 Beazer/INDSPEC Properties 2568412 Elevation and Datum Location North Petrolia, Pennsylvania 1159.926532 NAVD 1988 620115.8318 Sample Data Remarks Depth Scale Number Penetr. resist BL/6in Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Reading (ppm) 15 1.4 SS 13 4 ∞ 1.4 11 16 1025 Collect env. sample SAA 1.0 8 BH-08-22_14.0-14.5 1.9 11 Some staining / No odor 4 17 6 Light gray weathered MUDSTONE (mottling) 2.4 16.0-18.0' 17 2.9 15 2.1 1029 END BORING @ 18.0' End of Boring @ 18 ft Q:DATA42568401/DATA FROM PHILLY/OFFICE DATA/GINT LOGS\INDSPEC BORING LOGS.GPJ ... 11/2/2009 3:07:02 PM ... Report. Log - LANGAN ...Template LANGAN.GDT (Refusal) 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33



BH-08-23 Sheet Log of Boring of 2 1 Project No. East Project Beazer/INDSPEC Properties 2568412 1426026.83 Location Elevation and Datum North Petrolia, Pennsylvania 1159.326319 NAVD 1988 620118.2128 Drilling Agency Date Started Date Finished Pennsylvania Drilling 4/9/08 4/9/08 **Drilling Equipment** Completion Depth Rock Depth CME 45C Track Rig 17.3 ft 16.8 ft Size and Type of Bit Disturbed Undisturbed Core Number of Samples 2 7/8" Roller Bit 9 N/A N/A Casing Diameter (in) Casing Depth (ft) Completion 24 HR. First Water Level (ft.) 3.5" Temporary Steel Casing 0 N/A \mathbf{V} N/A 17.3 Drop (in) 30" Casing Hammer Weight (lbs) Drilling Foreman 140 lbs Auto Jim Lang Sampler 2" x 2' O.D. Split Spoon Inspecting Engineer Drop (in) 3<u>0"</u> Sampler Hammer Weight (lbs) 140 lbs Bobby Huff / Kristen Ward Sample Data MATERIAL SYMBOL Remarks Depth Number Penetr. resist BL/6in Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Type . Report: Log - LANGAN ...Template LANGAN.GDT Scale (ppm) 1132 Start boring Tan-gray f-m SAND, loose (wet) Staining / strong odor 1.0-2.0' Silty f-c SAND and GRAVEL, sandstone fragments 1.7 1509 Collect env. sample SS 7 BH-08-23_1.0-2.0 P 14.3 9 23.2 9 Ø 2 30.2 SAA 6 22.1 8 Ð 5 3 α Staining / strong odor 2.0-4.0' 8.0 8 7.4 9 \mathcal{D} .11/2/2009 3:07:06 PM .. 1140 Drive casing to 4.0', SAA 11.0 ream hole with roller bit 7.4 Ø 1155 Break for lunch 10 1300 Resume boring 4 5 10.7 -lighter brown from 5-6' 12 Ð 5.8 9 6 Brown staining 6.0-8.0' Brown silty f-c SAND, some f-c gravel and orange sandstone, loose 5.0 SS 44/2568401/DATA FROM PHILLY/OFFICE DATA/GINT LOGS/INDSPEC BORING LOGS.GPJ (wet) 1.9 7 4 6 3.5 1.3 5 8 1350 Drive casing to 8.0', 0.7 SAA 6 ream hole with roller bit 6.8 5 2 9 Some black staining / slight 1.1 odor 8.0-10.0' 1.0 8 10 Black staining 10.0-12.0' Gray-black silty f-c SAND and GRAVEL, some sandstone 0.8 fragments, mottling (wet) 1.2 7 9 9 1.5 10 Ø 4.6 10 1415 Drive casing to 12.0', 3.3 SAA ream hole with roller bit Ö 1.0 13 5 13 1.9 Some staining 12.0-14.0' 10 Collect environmental sample 3.0 BH-08-23_13.0-14.0 13 SS Gray-black silty f-c SAND and orange f-m grained weathered 1.1 10 sandstone, compact 5 ω Some staining / No odor 5.5 13 14.0-16.0'



Log of Boring BH-08-23 Sheet 2 of 2 Project Project No. East Beazer/INDSPEC Properties 1426026.83 2568412 Elevation and Datum North Location Petrolia, Pennsylvania 1159.326319 NAVD 1988 620118.2128 Sample Data Remarks Depth Scale PID Reading (ppm) Penetr. resist BL/6in Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) 15 1.9 15 5 ω 2.0 13 16 1444 Drive casing to 16.0', SAA 1.3 20 rheem hoe with roller bit 4.1 6 12 Light gray weathered MUDSTONE 17 50/3 3.1 End of Boring @ 17.3 ft 1.1 18 1457 END BORING @ 17.3' 1.0 Q:DATA42568401/DATA FROM PHILLY/OFFICE DATA/GINT LOGS\INDSPEC BORING LOGS.GPJ ... 11/2/2009 3:07:07 PM ... Report. Log - LANGAN ...Template LANGAN.GDT (Refusal) 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33



BH-08-24 Sheet Log of Boring of 2 1 ENGINEERING & ENVIRONMENTAL SERVICES Project No. East Project Beazer/INDSPEC Properties 2568412 1426019.45 Location Elevation and Datum North 1160.758979 NAVD 1988 620090.1925 Petrolia, Pennsylvania Drilling Agency Date Started Date Finished 4/11/08 4/11/08 Pennsylvania Drilling **Drilling Equipment** Completion Depth Rock Depth Acker Scout Track Rig 19.3 ft 19 ft Size and Type of Bit Disturbed Undisturbed Core Number of Samples 2" OD Roller Bit 10 Casing Diameter (in) Casing Depth (ft) Completion 24 HR. First Water Level (ft.) 3.5" / 2.5" Temp Steel 0 $\mathbf{\Lambda}$ 16 Drop (in) 30 " Drilling Foreman Casing Hammer Weight (lbs) 140 lb Cathead Jim Lang Sampler 2" x 2.0' OD Split Spoon Inspecting Engineer Drop (in) 3<u>0 "</u> Sampler Hammer Weight (lbs) 140 lb Cathead **Bobby Huff** Sample Data MATERIAL SYMBOL Remarks Depth PID Number Penetr. resist BL/6in Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Type emplate LANGAN.GD Scale Reading (ppm) 1014 Start boring Black f-c gravelly f-c SAND, trace silt, loose (wet) 35.8 Black staining / strong, sweet 90.2 odor 0.0-2.0' SS 4 89.4 5 174 4 2 426 1435 Collect env. sample Olive gray/ black/ brown silty f-c SAND, some f-gravel and 9 BH-08-24 2.0-2.5 sandstone fragments, loose (wet) 90.1 Minor staining / strong, sweet 15 odor 2.0-4.0' 5 3 α 30.0 11 17.4 9 1025 Drive casing to 4.0', SAA, more compact, red mottling present from 5.5-6.0' 35.2 11 ream hole with roller bit 5.4 11 SS 9 5 Some black staining at 5.5' 21.1 14 Strong, sweet odor 4.0-6.0' 24.8 14 6 Slight staining at 6.5' 33.7 SAA (DATA4\2568401\DATA FROM PHILLY\OFFICE DATA\GINT LOGS\INDSPEC BORING LOGS.GPJ 12 Slight odor 6.0-8.0' 18.6 15 5 7 4 8.9 14 7.0 16 8 1115 Drive casing to 8.0', Black gray f-c SAND and f-GRAVEL, some silt and brown 7.5 11 ream hole with roller bit sandstone fragments, compact (wet) Black staining / slight odor 5.4 :0 8 8.0-10.0' 4 2 9 3.3 6 2.6 6 10 Some staining / slight odor SAA 1.0 10 10.0-12.0' Ö 1.1 8 9 4 1.6 10 Ø 1.1 12 1150 Drive casing to 12.0', 3.9 SAA, larger brown-gray sandstone fragments 10 ream hole with roller bit 7.1 14 SS 5 13 4.1 Slight odor 12.0-14.0' Ð 10 3.7 12 SS Dark gray m-SAND, trace c-sand and silt (wet) 2.8 20 4 ω Slight odor in m-sand 4.0 23 14.0-15.0'



Log of Boring BH-08-24 Sheet 2 2 of **ENGINEERING & ENVIRONMENTAL SERVICES** Project No. East Project Beazer/INDSPEC Properties 2568412 1426019.45 Location Elevation and Datum North 1160.758979 NAVD 1988 620090.1925 Petrolia, Pennsylvania Sample Data MATERIAL SYMBOL Remarks Depth Number Penetr. resist BL/6in Recov. (in) Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Scale Reading (ppm) 15 Black orange-gray f-c SAND and weathered SANDSTONE, some 3.9 Very compacted 15.0-16.0' SS 17 silt, dense (moist) 4 ω Ø 1.2 14 16 Dark gray-black silty f-c SAND and f-GRAVEL and weathered 9.2 1625 Collect env. sample 19 BH-08-24_15.5-16.0 SANDSTONE fragments (wet) 5.0 Attempted SS-9, first try all 18 8 slough 0 17 6.3 1230 ream hole to 18.0' with 15 roller bit 21.3 11 1255 hole collapse 18 Drive 18" SS with 1.5" I.D. - 1.75" O.D. 18.0-20.0' 0.8 SAA SS 22 Q:DATA42568401/DATA FROM PHILLY/OFFICE DATA/GINT LOGS\INDSPEC BORING LOGS.GPJ ... 11/2/2009 3:07:11 PM ... Report. Log - LANGAN ...Template LANGAN, GDT Ø 9 7 0.4 1300 Break 23 19 1420 return 50/3 0.4 Light gray-tan weathered MUDSTONE (dry) 1450 Drive 2.5" steel casing to End of Boring @ 19.3 ft 0.1 14.0' 20 1518 encountering delays plugged drill rods from drilling mud 1526 Drive casing to 16.0' 21 1550 Rheem hole to 16.0' delays due to clogged drill bit 1600 Drive SS-9 16.0-18.0' 22 SS-9 was not sampled due to an excessive amount of rheeming and washing from 12.0-16.0' 23 PIDs are not representative 1612 END BORING at 19.25' (Refusal) 24 25 26 27 28 29 30 31 32 33



BH-08-25 Log of Boring Sheet of 2 1 Project No. East Project Beazer/INDSPEC Properties 2568412 1426030.12 Location Elevation and Datum North 620089.2084 Petrolia, Pennsylvania 1160.056273 NAVD 1988 Drilling Agency Date Started Date Finished 4/14/08 Pennsylvania Drilling 4/14/08 Rock Depth **Drilling Equipment** Completion Depth Acker Scout Track Rig 18.8 ft 18.3 ft Size and Type of Bit Disturbed Undisturbed Core Number of Samples 2 7/8" OD Roller Bit 10 Casing Diameter (in) Casing Depth (ft) Completion 24 HR. First Water Level (ft.) 3.5" Temp Steel 0 $\mathbf{\Lambda}$ 16 Drop (in) 30_" Drilling Foreman Casing Hammer Weight (lbs) 140 lb Cathead Jim Lang Sampler 2" x 2.0' OD Split Spoon Inspecting Engineer Drop (in) 30<u>"</u> Sampler Hammer Weight (lbs) 140 lb Cathead **Bobby Huff** Sample Data MATERIAL SYMBOL Remarks Depth PID Number Penetr. resist BL/6in Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Type nplate LANGAN.GDT Scale (ppm) 1018 Start boring Black silty f-c SAND, some f-subrounded gravel and red-orange 2.1 Poor recovery 0.0-2.0' sandstone fragments (wet) Black staining / Strong odor 5 SS N 5 Log - LANGAN 2 Olive gray silty f-c SAND and f-GRAVEL, some clay and sandstone 1640 Collect env. sample 4.8 6 BH-08-25 2.0-3.0 fragments (wet) Some staining / slight odor 2 4.6 3 2 0-4 0' 5 3 α Report: Dark gray SILT, trace f-m sand, tight (moist) becomes wet at 4.5' 4.7 Silt 3.0-3.5' 3 1.0 11/2/2009 3:07:15 PM . 1045 Drive casing to 4.0', 0.5 ream with roller bit -sandstone fragments in silt at 4.5', trace c-sand 0.5 Silt at 5.0', firm to soft, no 8 SS odor 5 Black-gray f-gravelly f-c SAND, some light orange sandstone 2.1 Some black staining / no odor fragments, compact (moist) 5.0-7.0 2.6 10 6 0.9 LOGS\INDSPEC BORING LOGS.GPJ 14 0.7 15 9 4 Olive-gray/ brown silty f-c SAND and GRAVEL, some light orange 0.4 No odor 6.0-8.0' 15 sandstone fragments, loose (wet) 1.7 Ð 11 8 1.3 10 1.4 10 9 2 9 Some black staining / no odor Black-gray silty f-SAND, some m-c sand, trace subrounded f-gravel, 1.6 8 loose (wet) 8.0-10.0' DATA4/2568401/DATA FROM PHILLY/OFFICE DATA/GINT 2.4 9 Olive gray/ brown silty f-c SAND and f-GRAVEL, some sandstone 10 1123 Drive casing to 10.0', 0.8 fragments (wet) 9 ream hole with roller bit P 1.7 1135 Drive spoon to 12.0' 9 2 9 Black staining 11.0-12.0' 1.6 10 Ò 0.6 9 3.3 Dark gray f-m SAND, some c-sand and f-subrounded gravel 14 4.6 13 SS 0 13 Grading to Brown-gray-orange gravelly f-m SAND and 2.1 Increasing sandstone with 19 depth SANDSTONE fragments 1.1 18 SS Black -gray-orange silty f-c SAND and GRAVEL and sandstone 1.2 fragments, more compact with depth (moist) 16 ω 0.5 8 17



Log of Boring BH-08-25 Sheet 2 of 2 Project Project No. East Beazer/INDSPEC Properties 1426030.12 2568412 Location Elevation and Datum North Petrolia, Pennsylvania 1160.056273 NAVD 1988 620089.2084 Sample Data MATERIAL SYMBOL Remarks Depth Scale Number Penetr. resist BL/6in Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Reading (ppm) 15 0.4 SS 19 16 ω D 1.1 22 16 No staining 16.0-18.0' SAA, some red mottling (moist) 3.4 10 1650 Collect env sample 1.3 BH-08-25_17.0-18.0 9 6 17 2.0 13 0.4 12 18 Weathered bedrock 2.4 23 Q:DATA42568401/DATA FROM PHILLY/OFFICE DATA/GINT LOGS\INDSPEC BORING LOGS. GPJ ... 11/2/2009 3:07:16 PM ... Report. Log - LANGAN ...Template LANGAN. GDT 9 ω encountered at 18.3' Red-orange/ light gray weathered MUDSTONE 50/2 1233 END BORING at 18.8' End of Boring @ 18.8 ft 19 (Refusal) 20 21 22 23 24 25 26 27 28 29 30 31 32 33



BH-08-26 Sheet Log of Boring of 2 1 Project No. East Project Beazer/INDSPEC Properties 2568412 1426039.7 Location Elevation and Datum North 620087.5257 Petrolia, Pennsylvania 1160.152996 NAVD 1988 Drilling Agency Date Started Date Finished 4/14/08 Pennsylvania Drilling 4/14/08 **Drilling Equipment** Completion Depth Rock Depth Acker Scout Track Rig 17.9 ft 17.6 ft Size and Type of Bit Disturbed Undisturbed Core Number of Samples 2 7/8" OD Roller Bit 9 Casing Diameter (in) Casing Depth (ft) Completion 24 HR. First Water Level (ft.) 3.5" Temp Steel 0 \mathbf{V} 16 Drop (in) 30 " Drilling Foreman Casing Hammer Weight (lbs) Cathead 140 lb Jim Lang Sampler 2" x 2.0' OD Split Spoon Inspecting Engineer Drop (in) 3<u>0 "</u> Sampler Hammer Weight (lbs) 140 lb Cathead **Bobby Huff** Sample Data Remarks MATERIAL Depth PID Number Penetr. resist BL/6in Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Type GAN.GD Scale Reading (ppm) 1438 Start boring Black f-c sandy f-GRAVEL, some f-c sandstone fragments, loose 3.8 3 Black staining / strong odor 0.0-2.0' SS 3 4 2 2 2 Black f-c SAND adn GRAVEL, some silt and sandstone fragments, 6.0 Heavy black staining / strong 3 odor 2.0-4.0' loose (wet) 3.5 1700 Collected env sample 5 SS BH-08-26_2.0-3.0 Olive gray/ light brown f-gravelly SILT, some f-c sand, medium 7 3 α 1.7 plasticity (moist) 4.1 5 11/2/2009 3:07:20 PM Drive casing to 4.0', ream hole 21 5 with roller bit SAA, picking up more c-sand 1.3 Ф SS 5 5 က ω 1.2 10 9 1.0 10 6 Gray-brown silty f-c SAND and GRAVEL and SANDSTONE 3.3 DATA4\2568401\DATA FROM PHILLY\OFFICE DATA\GINT LOGS\INDSPEC BORING LOGS.GPJ 11 fragments (wet) 1.2 P 12 9 7 4 1.3 6 1.0 Gray f-c sandy SILT, medium plasticity (moist) 9 Gray brown silty f-c SAND and f- GRAVEL, some sandstone 8 3" Silt lens present 7.5-7.7' 1.3 6 fragments (wet) Drive casing to 8.0', rheem 0 1.2 hole to 8.0' 7 2 9 1.6 11 Ò 1.6 13 10 Trace black staining 10.0-12.0' SAA, gray brown/ black (wet) 0.6 11 Ď 1.2 11 4 9 0.9 Ö 12 1.0 12 1540 Drive casing to 12.0', 3.5 SAA 6 ream hole with roller bit 1.3 Trace black staining 12.0-12.5' 11 D 13 2.5 12 3.3 13 SS Gray-brown silty f-c SAND and weathered SANDSTONE fragments, 1.3 12 some f-gravel, compact (moist) 9 ω 1.4 15



Log of Boring BH-08-26 Sheet 2 of 2 Project No. East 2568412 Beazer/INDSPEC Properties 1426039.7 Location Elevation and Datum North Petrolia, Pennsylvania 1160.152996 NAVD 1988 620087.5257 Sample Data Remarks Depth Scale Number Penetr. resist BL/6in Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Reading (ppm) 15 SAA, trace small black coal fragments at 16.0' 1.3 SS 19 9 ω 1.2 19 16 1710 Collected env sample 0.8 21 BH-08-26_16.0-17.0 0.9 23 9 0 Encountered weathered 17 1.1 bedrock at 17.6' 25 Orange-light gray weathered MUDSTONE (dry) 1.0 50/3 1600 END BORING at 17.9' 18 End of Boring @ 17.9 ft (Refusal) Q:DATA42568401/DATA FROM PHILLY/OFFICE DATA/GINT LOGS\INDSPEC BORING LOGS.GPJ ... 11/2/2009 3:07:20 PM ... Report. Log - LANGAN ...Template LANGAN.GDT 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33



GAN.GD

11/2/2009 3:07:23 PM

Q:\DATA4\2568401\DATA FROM PHILLY\OFFICE DATA\GINT LOGS\INDSPEC BORING LOGS.GPJ

Log of Boring BH-08-27/MPZ-01A/B Sheet 2 of 1 Project No. East Project Beazer/INDSPEC Properties 2568412 1426036.178 Location Elevation and Datum North 1159.300072 NAVD 1988 620230.249 Petrolia, Pennsylvania Drilling Agency Date Started Date Finished 4/15/08 4/15/08 Pennsylvania Drilling **Drilling Equipment** Completion Depth Rock Depth CME 45 Track Rig 16.5 ft Size and Type of Bit Disturbed Undisturbed Core Number of Samples 2 7/8" OD Roller Bit 4 Casing Diameter (in) Casing Depth (ft) Completion 24 HR. First Water Level (ft.) 3.5" Temp Steel \mathbf{V} 16 Drop (in) 30 " Drilling Foreman Casing Hammer Weight (lbs) 140 lb Auto Jim Lang Sampler 2" x 2.0' OD Split Spoon Inspecting Engineer Drop (in) 3<u>0 "</u> Sampler Hammer Weight (lbs) 140 lb **Bobby Huff** Sample Data Remarks MATERIAL Depth Number Penetr. resist BL/6in Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Type Scale (ppm) 0952 Start boring Black f-c sandy GRAVEL and SANDSTONE fragments, some silt, 3 Black staining / moderate odor 0.7 0.0-2.0' 3 9 15.2 2 10.13.0 3 2 Black staining / strong odor Black silty f-c SAND and GRAVEL, some sandstone fragments, 52.8 2.0-4.0 loose (wet) 41.9 6 SS 5 3 $^{\circ}$ 12.9 9 5.7 7 1010 Drive casing to 4.0', SAA 3.2 6 ream hole with roller bit 2.3 Some staining / slight odor 8 5 4.0-6.0' 5 5.9 1026 Collect geotech sample 9 \mathcal{D} BH-08-27_5.0-6.0 5.6 9 6 Slight odor 6.0-8.0' Black-gray silty f-c SAND and f-GRAVEL, increasing silt with depth 4.4 SS 5 Ð 5.7 5 7 4 6.1 3 1.7 Gray-black SILT, trace c-sand and slay, soft (wet) 3 8 Tagged top of silt layer at 7.9' STRAIGHT DRILL to 16.5' 1053 Begin straight drilling No recover Advance auger to 16.5' set AUGER pizometers at 16.0' and 7.5' 9 10 12 13



Project		Project No.							East		
ocation	Beazer/INDSPEC Properties	Elevation a	nd Da	atum		8412			North	14260	36.17
	Petrolia, Pennsylvania		1988		620230.24						
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Log of Boring BH-08-28/MPZ-02A/B Sheet of 2 1 Project Project No. East 1426039.223 Beazer/INDSPEC Properties 2568412 Location Elevation and Datum North 1159.326319 NAVD 1988 620135.8215 Petrolia, Pennsylvania Drilling Agency Date Started Date Finished 4/16/08 4/16/08 Pennsylvania Drilling Drilling Equipment Completion Depth Rock Depth CME 45 Track Rig 16 ft Disturbed Undisturbed Size and Type of Bit Core Number of Samples 2 7/8" OD Roller Bit 24 HR. Casing Diameter (in) Casing Depth (ft) Completion First Water Level (ft.) 3.5" Temp Steel \mathbf{I} 16 Drop (in) 30 <u>"</u> Drilling Foreman Casing Hammer Weight (lbs) 140 lb Auto Jim Lang Sampler 2" x 2.0' OD Split Spoon Inspecting Engineer Drop (in) 30 " Weight (lbs) Sampler Hammer 140 lb **Bobby Huff** Sample Data MATERIAL SYMBOL Remarks Depth Number Recov. (in) Penetr. resist BL/6in Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Type Q:DATA42568401/DATA FROM PHILLY/OFFICE DATA/GINT LOGS\INDSPEC BORING LOGS. GPJ ... 11/2/2009 3:07:27 PM ... Report. Log - LANGAN ...Template LANGAN. GDT Reading (ppm) Scale 1109 Start boring Advance augers to 16' Set multilevel pizometers at 16' and 4' Advanced augers to 16.0' Set multilevel pizometers 2 3 5 6 8 9 10 12 13



Project		Log of Boring Project No							East		
_ocation	Beazer/INDSPEC Properties	Elevation a	and D)atum	256	8412			North	14260	39.22
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MATERIAL SYMBOL	Sample Description	Scale	Number	Type		Penetr. resist BL/6in	PID Reading (ppm)	(Drilli Fluid Lo	ng Fluid, D oss, Drilling	epth of Cas Resistanc	sing, e, etc.
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Log of Boring BH-08-29/MPZ-03A/B Sheet of 2 1 Project Project No. East Beazer/INDSPEC Properties 1426023.031 2568412 Location Elevation and Datum North 1160.46 NAVD 1988 620118.5026 Petrolia, Pennsylvania Drilling Agency Date Started Date Finished 4/16/08 4/17/08 Pennsylvania Drilling Drilling Equipment Completion Depth Rock Depth CME 45 Track Rig 16 ft Disturbed Undisturbed Size and Type of Bit Core Number of Samples 2 7/8" OD Roller Bit 24 HR. Casing Diameter (in) Casing Depth (ft) Completion First Water Level (ft.) 3.5" Temp Steel \mathbf{I} 16 Drop (in) 30 <u>"</u> Drilling Foreman Casing Hammer Weight (lbs) 140 lb Auto Jim Lang Sampler 2" x 2.0' OD Split Spoon Inspecting Engineer Drop (in) 30 " Weight (lbs) Sampler Hammer 140 lb Bobby Huff / Kristen Ward Sample Data MATERIAL SYMBOL Remarks Depth Number Recov. (in) Penetr. resist BL/6in Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Type Q:DATA42568401/DATA FROM PHILLY/OFFICE DATA/GINT LOGS\INDSPEC BORING LOGS. GPJ ... 11/2/2009 3:07:30 PM ... Report. Log - LANGAN ...Template LANGAN. GDT Reading (ppm) Scale Straight drill to 16.0' and set Advance augers to 16' and set multilevel pizometers multilevel pizometers No recovery AUGER 2 3 5 6 7 8 9 10 12 13



Project		Log of Boring Project No							East		
ocation	Beazer/INDSPEC Properties	Elevation a	and D	atum		8412			North	14260	23.03
	Petrolia, Pennsylvania					60.46 N	IAVD 1988			62011	8.502
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MATERIAL	Sample Description	Scale	Number	Type	Reco (in)	Penetr. resist BL/6in	PID Reading (ppm)	(Drillii Fluid Lo	ng Fluid, D ss, Drilling	epth of Cas Resistanc	sing, :e, etc.)
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Log of Boring BH-08-30/MPZ-04A/B Sheet of 2 1 Project No. East Project Beazer/INDSPEC Properties 2568412 1426029.442 Location Elevation and Datum North 1159.979825 NAVD 1988 Petrolia, Pennsylvania 620029.2985 Drilling Agency Date Started Date Finished 4/17/08 4/17/08 Pennsylvania Drilling **Drilling Equipment** Completion Depth Rock Depth CME 45 Track Rig 15.5 ft 14 ft Size and Type of Bit Disturbed Undisturbed Core Number of Samples 2 7/8" OD Roller Bit 8 Casing Diameter (in) Casing Depth (ft) Completion 24 HR. First Water Level (ft.) 3.5" Temp Steel 0 \mathbf{V} Drop (in) 30 " Drilling Foreman Casing Hammer Weight (lbs) 140 lb Auto Jim Lang Sampler 2" x 2.0' OD Split Spoon Inspecting Engineer Drop (in) 3<u>0 "</u> Sampler Hammer Weight (lbs) 140 lb Kristen Ward/ Dennis Webster Sample Data MATERIAL SYMBOL Remarks Depth Number Penetr. resist BL/6in (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Sample Description Type emplate LANGAN.GD Scale (ppm) 1335 Start boring Black f-c gravelly f-c SAND, loose (wet) 20.7 3 Very strong odor 0.0-2.0' $\langle \cdot \rangle$ 36.4 Dark black staining 0.0-1.0' 2 SS 1525 Collect env sample 7 19.3 Olive gray-brown SAA BH-08-30_1.0-2.0 5 large c-subangular sandstone fragments 36.0 3 2 7.4 Trace black staining/ slight Gray silty CLAY, some f-m sand, trace f-gravel 4 odor 2.0-4.0' 5.1 3 SS Collect geotech sample 5 3 α some f-m subangular sandstone fragments 4.6 BH-08-30_2.0-4.0 1.5 1400 Drive casing to 4.0', Light brown silty f-m SAND, trace clay (wet) 5.9 5 ream with roller bit 2.7 SS 5 4 Iron staining from 5.0-6.0' Light gray silty CLAY (moist) 2.8 3.6 6 Gray brown silty f-c SAND, some clay, trace subangular sandstone 6 1540 Collect env sample 1.6 fragments (moist) 5 -OGS\INDSPEC BORING LOGS.GPJ BH-08-30 7.0-8.0 2.9 Slight odor, minimal staining from 7.0-8.0' 4 5 1.4 Olive-black silty f-m SAND, some f-subangular gravel, trace red 5 mottling (moist) 2.6 5 8 1430 Drive casing to 8.0', ream with roller bit 0.8 Hole was overdrilled to 8.5' -2 driller error 9 Gray silty CLAY, trace f-sand (wet) 1.0 SS 3 7 DATA4\2568401\DATA FROM PHILLY\OFFICE DATA\GINT D. 1.8 3 Gray-brown silty f-m SAND, some f-sandstone fragments 10 Atresian conditions observed 1.3 5 5 at 10.0' 1.1 5 5.5 9 Poor recovery 1.3 -some c-subangular sandstone fragments 5 1.2 5 1450 Drive casing o 12.0', 1.4 SAA- trace coal and sandstone fragments 6 ream with roller bit 1.1 Collect env sample 8 SS BH-08-30_11.5-12.5 13 <u>6</u> 1.1 7 1.2 Light brown weathered SANDSTONE 15 SS Light gray-brown weathered SANDSTONE, very soft, friable (moist) 0.4 12 4

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	Petrolia, Pennsylvania						825 NAVD 1	988		620029	.298		
MATERIAL SYMBOL	Sample Description	Depth Scale	Number	Туре		Penetr. resist aldw BL/6in Q		(Drillii Fluid Lo	Rem ng Fluid, D ss, Drilling	arks epth of Casi Resistance	ng, , etc.)		
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BH-08-31 Sheet Log of Boring of 1 1 Project No. East Project Beazer/INDSPEC Properties 2568412 1426037.68 Location Elevation and Datum North 1160.301808 NAVD 1988 Petrolia, Pennsylvania 619994.478 Drilling Agency Date Started Date Finished 4/18/08 Pennsylvania Drilling 4/18/08 **Drilling Equipment** Completion Depth Rock Depth CME 45 Track Rig 9.7 ft 9.2 ft Size and Type of Bit Disturbed Undisturbed Core Number of Samples 2 7/8" OD Roller Bit 5 Casing Diameter (in) Completion 24 HR. Casing Depth (ft) First Water Level (ft.) 3.5" Temp Steel 0 $\mathbf{\Lambda}$ Drop (in) Casing Hammer Weight (lbs) Drilling Foreman 140 lb Auto Jim Lang Sampler 2" x 2.0' OD Split Spoon Inspecting Engineer Drop (in) 3<u>0 "</u> Sampler Hammer Weight (lbs) 140 lb Kristen Ward/ Dennis Webster Sample Data MATERIAL SYMBOL Remarks Depth Number Penetr. resist BL/6in (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Sample Description Type Report: Log - LANGAN ...Template LANGAN.GD1 Scale (ppm) 1015 Start boring, water level Gray-brown-black f-c subangular GRAVEL, some m-c sand (wet) 8 ~1.2' 49.4 Trace black staining from 3 1.0-2.0 19.2 4 25.4 3 2 Dark black f-c SAND and GRAVEL, trace silt (wet) 28.9 Dark black staining / strong 3 odor 2.0-4.0' 74.8 Ø Sheen in spoon SS 3 1200 Collect env sample 3 $^{\circ}$ ω 94.3 BH-08-31_3.0-4.0 125 Gray-brown silty CLAY, some f-m sand, trace f-c subangular gravel 5 (moist) 1040 Drive casing to 4.0', 462 2 ream hole with roller bit 98.2 SAA- increased anounts of sandstone fragments 3 SS Strong odor 4.0-6.0' 9 5 78.3 5 43.3 6 6 Bright orange mottling 52.8 SS LOGS\INDSPEC BORING LOGS.GP. 170.0 1230 Collect env sample Light brown-orange CLAY, some silt, trace sandstone fragments 8 BH-08-31_6.0-7.0 7 4 (moist) 38.2 9 33.5 8 8 1100 Drive casing to 8.0', Brown-gray-black silty CLAY, some f-m sand, trace sandstone SS 32.3 4 ream hole with roller bit fragments (moist) 2 Ŋ 3.0 3 9 1245 Collect env sample 9 50/3 3.0 BH-08-31 8.5-9.0 Light brown-gray weathered SANDSTONE 1115 END BORING @ 9.7' Q:\DATA4\2568401\DATA FROM PHILLY\OFFICE DATA\GINT (Refusal) End of Boring @ 9.7 ft 10 Backfill hole with bentonite pellets 12 13



Log of Boring BH-08-32/MPZ-05A/B Sheet of 1 1 Project No. East Project Beazer/INDSPEC Properties 2568412 1426027.14 Location Elevation and Datum North 1159.937054 NAVD 1988 619984.888 Petrolia, Pennsylvania Drilling Agency Date Started Date Finished 4/21/08 Pennsylvania Drilling 4/21/08 **Drilling Equipment** Completion Depth Rock Depth CME 45 Track Rig 10.8 ft 10 ft Size and Type of Bit Disturbed Undisturbed Core Number of Samples 2 7/8" OD Roller Bit 6 Casing Diameter (in) Completion 24 HR. Casing Depth (ft) First Water Level (ft.) 3.5" Temp Steel 0 $\mathbf{\Lambda}$ Drop (in) 30 " Casing Hammer Weight (lbs) Drilling Foreman 140 lb Auto Jim Lang Sampler 2" x 2.0' OD Split Spoon Inspecting Engineer Drop (in) 30<u>"</u> Sampler Hammer Weight (lbs) 140 lb Bobby Huff / Kristen Ward Sample Data MATERIAL SYMBOL Remarks Depth Number Penetr. resist BL/6in Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Type Template LANGAN.GD Scale (ppm) 0840 Start boring Black f-c SAND, some silt, trace f-m subrounded gravel, loose (wet) 101 3 470 1125 Collect env. sample 5 SS Brownish-yellow f-c SAND and GRAVEL, some sandstone BH-08-32 1.0-2.0 7 378 fragments, loose (wet) 5 5 1845 3 Log - LANGAN 2 LNAPL visible in sample, PID: 631 Dark yellowish-brown f-c sandy SILT, some f-gravel and clay 2 134 ppm 1736 3 9 3 α Collect env. sample Dark yellowish-brown silty CLAY, tace f-c sand and gravel, firm 1238 BH-08-32_3.0-4.0 (moist) 847 3 11/2/2009 3:07:41 PM Brownish-yellow silty f-c SAND and GRAVEL, loose (wet) 0900 Drive casing to 4.0', 900 2 losing silt with depth ream hole with roller bit 393 \mathcal{D} 4 SS 7 5 186 Ò 77.4 6 Collect geotech sample Gray silty CLAY, some f-c sand, micaceous, firm (moist) 330 3 BH-08-32_6.0-7.0 151 OGS SS 3 7 4 39.4 5 Q:\DATA4\2568401\DATA FROM PHILLY\OFFICE DATA\GINT LOGS\INDSPEC BORING Gray-brown clayey SILT, some f-c sand and gravel, soft (wet) 158.0 6 8 0915 Drive casing to 8.0', Dark yellowish-brown/ grayish brown f-c sandy SILT, some clay and 219 2 ream hole with roller bit dark brown sandstone fragments, soft 100 5 2 9 1145 Collect env. sample 29.7 6 BH-08-32_9.0-10.0 15.6 8 10 Tan-orange-brown weathered SANDSTONE 8.8 SS 20 5 9 23.7 50/3 0925 END BORING at 10.8' 11 End of Boring @ 10.8 ft 7.7 (Refusal) 39.7 Artesian conditions noted after 12 boring completion Multilevel pizometers set at 10.0 and 4.0' 13



BH-08-33 Sheet Log of Boring of 1 1 Project No. East Project Beazer/INDSPEC Properties 2568412 1426034.52 Location Elevation and Datum North Petrolia, Pennsylvania 1160.692321 NAVD 1988 619941.514 Drilling Agency Date Started Date Finished Pennsylvania Drilling 4/21/08 4/22/08 **Drilling Equipment** Completion Depth Rock Depth Acker Scout Track Rig 5.2 ft 5 ft Size and Type of Bit Disturbed Undisturbed Core Number of Samples 2 7/8" OD Roller Bit 3 Casing Diameter (in) Completion 24 HR. Casing Depth (ft) First Water Level (ft.) 3.5" Temp Steel \mathbf{V} Drop (in) Casing Hammer Weight (lbs) Drilling Foreman 140 lb Safety Jim Lang Sampler 2" x 2.0' OD Split Spoon Inspecting Engineer Drop (in) 30<u>"</u> Sampler Hammer Weight (lbs) 140 lb Safety Bobby Huff / Kristen Ward Sample Data MATERIAL SYMBOL Remarks Depth Number Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Type emplate LANGAN.GD Scale (ppm) 1539 Start boring Black f-c SAND, some f-c subrounded gravel, loose (wet) 16 5 Black staining / slight odor 11.1 P 0.0-2.0' 4 7 Gray-brown f-sandy SILT, soft (moist) 6.0 Collected env sample 5 BH-08-33_0.0-1.0 Gray-brown silty f-c SAND, some f-gravel and sandstone fragments 7.1 5 Report: Log - LANGAN 2 Orange-brown highly weathered SANDSTONE, some loose f-m 1556 Strong sweet odor in 9.8 13 ambient air - no drilling or sand and silt (wet from 2.0-3.0') (moist from 3.0-4.0') 4.9 sampling occurring 13 SS 5 3 $^{\circ}$ 5.3 8 11.9 8 Q:DATA4\2568401\DATA FROM PHILLY\OFFICE DATA\GINT LOGS\INDSPEC BORING LOGS.GPJ ... 11/2/2009 3:07:44 PM . 1556 Drive casing to 4.0', Dark gray-brown m-SAND and weathered SANDSTONE, some silt, 7.3 12 loose, friable (wet) ream hole with roller bit SS 7 က 17.7 End drilling for the day 35 5 50/2 4/22/08 0804 continue boring End of Boring @ 5.2 ft Minor staining / slight sweet 18.2 odor 4.0 - 5.2 1615 Collect env. sample BH-08-33_4.0-5.0 6 0808 END BORING @ 5.2' 7 (Refusal) 8 9 10 12 13



BH-08-34 Sheet Log of Boring of 1 1 Project No. East Project Beazer/INDSPEC Properties 2568412 1426030.2 Location Elevation and Datum North 1160.519179 NAVD 1988 619935.3275 Petrolia, Pennsylvania **Drilling Agency** Date Started Date Finished 4/22/08 4/22/08 Pennsylvania Drilling **Drilling Equipment** Completion Depth Rock Depth Acker Scout Track Rig 6.8 ft 6.5 ft Size and Type of Bit Disturbed Undisturbed Core Number of Samples 2 7/8" OD Roller Bit 4 Casing Diameter (in) Completion 24 HR. Casing Depth (ft) First Water Level (ft.) 3.5" Temp Steel \mathbf{V} Drop (in) Casing Hammer Weight (lbs) Drilling Foreman 140 lb Safety Jim Lang Sampler 2" x 2.0' OD Split Spoon Inspecting Engineer Drop (in) 30<u>"</u> Sampler Hammer Weight (lbs) 140 lb Safety Bobby Huff / Kristen Ward Sample Data MATERIAL SYMBOL Remarks Depth PID Number Penetr. resist BL/6in Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Type emplate LANGAN.GD Scale Reading (ppm) 0853 Start boring Brownish-black f-m SAND, some f-gravel and sandstone fragments, 6.2 6 Black staining / strong odor loose (wet) 108 0.0-2.0' 7 SS 5 Gray-brown silty m-SAND and weathered SANDSTONE, loose (wet) 51.9 20.0 20 2 24.6 Black staining / slight, sweet SAA, trace clay 3.0-4.0' 23 odor 2.0-4.0' 39.4 15 9 3 $^{\circ}$ 36.4 18 16.8 25 0917 Drive casing to 4.0', Gray-brown f-m silty SAND and weathered SANDSTONE, some f-m 3.1 10 gravel, trace clay, friable (moist) ream with roller bit 1.8 Some staining / slight odor 13 SS 4.0-6.0' 5 3.3 13 Collect env. sample 20.7 8 BH-08-34_5.0-6.0 6 3.3 SAA SS 13 Q:\DATA4\2568401\DATA FROM PHILLY\OFFICE DATA\GINT LOGS\INDSPEC BORING LOGS.GPJ 0 Light gray weatehred SANDSTONE 50/2 0939 Collect geotech sample 2.8 BH-08-34_6.0-6.8 End of Boring @ 6.8 ft 1.0 0937 END BORING at 6.8' 1.2 (Refusal) 8 Backfill hole with bentonite pellets 9 10 12 13



BH-08-35 Sheet Log of Boring of 1 1 Project No. East Project Beazer/INDSPEC Properties 2568412 1426024.59 Location Elevation and Datum North Petrolia, Pennsylvania 1160.557502 NAVD 1988 619929.8918 Drilling Agency Date Started Date Finished Pennsylvania Drilling 4/22/08 4/22/08 **Drilling Equipment** Completion Depth Rock Depth Acker Scout Track Rig 8.3 ft 7.8 ft Size and Type of Bit Disturbed Undisturbed Core Number of Samples 2 7/8" OD Roller Bit 5 Casing Diameter (in) Casing Depth (ft) Completion 24 HR. First Water Level (ft.) 3.5" Temp Steel $\mathbf{\Lambda}$ 2.2 Drop (in) 30<u>"</u> Drilling Foreman Casing Hammer Weight (lbs) 140 lb Safety Jim Lang Sampler 2" x 2.0' OD Split Spoon Inspecting Engineer Drop (in) 3<u>0 "</u> Sampler Hammer Weight (lbs) 140 lb Bobby Huff / Kristen Ward Sample Data MATERIAL SYMBOL Remarks Depth Number Penetr. resist BL/6in (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Sample Description Type Template LANGAN.GD Scale Reading (ppm) 1004 Start boring Black silty f-c SAND and GRAVEL (wet) 1.4 5 Black staining / slight sheen 11.3 P 0.0-1.0' SS 12 7 Gray-brown weathered SANDSTONE, f-m silty sand in shoe (wet) 11.8 Collect env. sample 18 BH-08-35_1.0-2.0 24.2 Report: Log - LANGAN .. 8 2 1021 Refusal at 2.2' (boulder) 9.8 Yellowish-brown/ gray m-SAND and weathered SANDSTONE, some SS 70/2 1022 Drive casing to 2.2' silt (wet) 1057 Attempt to core through BOULDER boulder with plug bit 3 1.0 Light gray rheem water Yellowish-brown/ gray clayey SILT, some f-c sand and sandstone 8 observed fragments, soft (moist) 0.8 Stopped coring at 3.2' (ream 11/2/2009 3:07:51 PM . 8 water color change to brown) SS 7 0.8 3 Yellowish brown/ gray sandy SILT, some clay and weathered 10 0.3 sandstone (wet) 13 5 2.4 9 2.0 Gray brown m-SAND and weathered SANDSTONE, some f-gravel 6 18 Slight odor 5.0-7.0' 5 1.0 Q:\DATA4\2568401\DATA FROM PHILLY\OFFICE DATA\GINT LOGS\INDSPEC BORING LOGS.GPJ and silt, trace clay, loose (wet) 4.2 7 7 5.6 Using 18" spoon with 1 3/4" SS 17 O.D. 3.6 9 2 Gray brown weathered SANDSTONE, some f-m sand and silt 8 50 15.5 Collect env. sample (moist) BH-08-35_7.0-7.5 End of Boring @ 8.3 ft 5.0 1125 END BORING @ 8.3' 9 (Refusal) Backfill hole with bentonite 10 pellets 12 13



BH-08-36 Sheet Log of Boring of 1 1 Project No. East Project Beazer/INDSPEC Properties 2568412 1426031.16 Location Elevation and Datum North 619910.053 Petrolia, Pennsylvania 1160.617207 NAVD 1988 Date Started **Drilling Agency** Date Finished 4/22/08 4/22/08 Pennsylvania Drilling **Drilling Equipment** Completion Depth Rock Depth Acker Scout Track Rig 6.2 ft 5.5 ft Size and Type of Bit Disturbed Undisturbed Core Number of Samples 2 7/8" OD Roller Bit Casing Diameter (in) Completion 24 HR. Casing Depth (ft) First Water Level (ft.) 3.5" Temp Steel \mathbf{V} Drilling Foreman Casing Hammer Weight (lbs) Drop (in) 30 " 140 lb Safety Jim Lang Sampler 2" x 2.0' OD Split Spoon Inspecting Engineer Drop (in) 30<u>"</u> Sampler Hammer Weight (lbs) 140 lb Safety Bobby Huff / Kristen Ward Sample Data MATERIAL SYMBOL Remarks Depth Number Penetr. resist BL/6in Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Type LANGAN.GD Scale (ppm) 1405 Start boring Reddish-black silty f-c SAND, some f-gravel, loose (wet) 5 Reddish-purple staining 24.6 0.0-1.0' 5 Glass debris 9 Gray-black SAA 6.4 Slight odor 0.0-2.0' 3 1642 Collect env. sample 3 BH-08-36_0.0-1.0 Report: Log - LANGAN 2 Grayish-brown SILT, some f-c sand, some clay (tight), trace 6 sandstone fragments (moist) 3.2 6 SS 3 α 6 Slight odor 2.0-4.0' 4.5 5 Gray-brown-black silty f-c SAND and GRAVEL 0.8 7 140 Drive casing to 4.0', ream SAA- increased sandstone fragments with depth 2.3 0 50 hole with roller bit 0.8 33 SS 1648 Collect env. sample 9 5 Gray c-angular GRAVEL lens (wet) 0.8 BH-08-36_5.0-5.5' 6 2.0 Light gray weathered SANDSTONE (moist) 47 6 1450 END BORING @ 6.2' Q:DATA4\2568401\DATA FROM PHILLY\OFFICE DATA\GINT LOGS\INDSPEC BORING LOGS.GPJ (Refusal) End of Boring @ 6.2 ft Backfill hole with bentonite 7 pellets 8 9 10 12 13



BH-08-37 Sheet Log of Boring of 2 1 Project No. East Project Beazer/INDSPEC Properties 2568412 1426045.21 Location Elevation and Datum North 1156.80691 NAVD 1988 Petrolia, Pennsylvania 620423.0398 Date Started Drilling Agency Date Finished 4/23/08 4/23/08 Pennsylvania Drilling Rock Depth **Drilling Equipment** Completion Depth CME 45 Track Rig 16.5 ft 15.2 ft Size and Type of Bit Disturbed Undisturbed Core Number of Samples 2 7/8" OD Roller Bit 9 Casing Diameter (in) Casing Depth (ft) Completion 24 HR. First Water Level (ft.) 0 $\mathbf{\Lambda}$ 3.5" Temp Steel 16 Drop (in) 30 " Drilling Foreman Casing Hammer Weight (lbs) 140 lb Auto Jim Lang Sampler 2" x 2.0' OD Split Spoon Inspecting Engineer Drop (in) 30<u>"</u> Sampler Hammer Weight (lbs) 140 lb Bobby Huff / Kristen Ward Sample Data MATERIAL SYMBOL Remarks Depth Number Penetr. resist BL/6in Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Type Template LANGAN.GDT Scale (ppm) 1350 Start boring Gray-brown-black m-c SAND, some f-c subangular and subrounded 1.2 gravel, loose (wet) 1.0 P 3 4 Slight odor 1.0-2.0' Dark gray-brown silty f-c SAND, some f-c subangular gravel, loose 1.7 5 (wet) 1.2 6 Report: Log - LANGAN 2 Gray-brown/ black silty f-c SAND and GRAVEL, some brown 2.3 11 weatehred sandstone fragments, loose (wet) Ð 1.4 3 SS 8 3 α Some black staining / slight 1.2 odor 2.0-4.0' Ċ 1.1 8 11/2/2009 3:07:58 PM 1402 Drive casing to 4.0', SAA 0.8 12 ream hole with roller bit Ð 0.7 SS 9 5 1.3 Increase in fines 5.5-6.0' \mathcal{D} 0.6 6 6 1420 Artesian conditions noted Dark gray f-SAND, some silt, loose (wet) 2.5 A4/2568401/DATA FROM PHILLY/OFFICE DATA/GINT LOGS/INDSPEC BORING LOGS.GPJ at 6.0' 1.6 Some black staining in f-sand 6.0-7.0 7 4 4 Gray-black silty f-c SAND and GRAVEL, some gray-brown 3.9 Some black staining / slight weathered sandstone fragments, loose (wet) odor 7.0-8.0' Ð 1.0 5 Collect env. sample 8 BH-08-37_7.0-7.5 on 4/24/08 1.2 SAA 5 at 0715 \$ 1425 Drive casing to 8.0', 1.0 5 ream hole with roller bit 7 2 9 1.4 Some black staining 8.0-10.0' Ø 2" f- sand lens 9.0-9.2', slight 1.5 5 odor 10 1.9 6 Dark gray f-m SAND lens, trace f-subrounded gravel, loose (wet) 2.8 6 9 7 Sand lens 10.5-11.0' Gray-brown f-m SAND and weathered SANDSTONE fragments, 1.9 13 Some black staining some silt, dense, red mottling (moist) 1.9 No odor 13 12 1446 Drive casing to 12.0', 0.8 ö SAA 14 :O: ream with roller bit 0.8 12 SS 13 6 Minor staining / slight odor 8.0 12 12.0-14.0' O 0.7 8 \cdot SS Brown f-m SAND and weathered SANDSTONE, dense (moist) 1.6 14 ω 9 Dense 14.0-16.0' 1.0 18 Collect env sample



Log of Boring BH-08-37 Sheet 2 of 2 Project No. East 2568412 Beazer/INDSPEC Properties 1426045.21 Location Elevation and Datum North Petrolia, Pennsylvania 1156.80691 NAVD 1988 620423.0398 Sample Data MATERIAL SYMBOL Remarks Depth Scale Number Penetr. resist BL/6in Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Reading (ppm) 15 BH-08-37_14.5-15.0 at 1.3 SS Light gray weathered SANDSTONE, some loose f-m sand, trace 12 Ŋ 4/24/08 0720 ∞ 9 1.8 39 16 1522 Drive casing to 16.0', Black COAL, trace weathered f-sandstone, very friable (wet) 0.7 9 SS<u></u> 5 50/5 ream hole with roller bit Coal 16.0-16.5' End of Boring @ 16.5 ft 1537 END BORING @ 16.5' 17 (Refusal) Backfill hole with bentonite 18 pellets 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33

Q:DATA42568401/DATA FROM PHILLY/OFFICE DATA/GINT LOGS\INDSPEC BORING LOGS. GPJ ... 11/2/2009 3:07:58 PM ... Report. Log - LANGAN ...Template LANGAN. GDT



BH-08-38 Sheet Log of Boring of 2 1 Project No. East Project 1426053.86 Beazer/INDSPEC Properties 2568412 Location Elevation and Datum North Petrolia, Pennsylvania 1157.301464 NAVD 1988 620423.5027 Drilling Agency Date Started Date Finished 4/24/08 4/24/08 Pennsylvania Drilling **Drilling Equipment** Completion Depth Rock Depth CME 45 Track Rig 16.7 ft 16 ft Size and Type of Bit Disturbed Undisturbed Core Number of Samples 2 7/8" OD Roller Bit 9 Casing Diameter (in) Casing Depth (ft) Completion 24 HR. First Water Level (ft.) 0 \mathbf{V} 3.5" Temp Steel 16 Drop (in) 30 " Casing Hammer Weight (lbs) Drilling Foreman 140 lb Auto Jim Lang Sampler 2" x 2.0' OD Split Spoon Inspecting Engineer Drop (in) 3<u>0 "</u> Sampler Hammer Weight (lbs) 140 lb Bobby Huff / Kristen Ward Sample Data MATERIAL SYMBOL Remarks Depth PID Number Penetr. resist BL/6in Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Type nplate LANGAN.GDT Scale (ppm) 0820 Start boring Light brown silty f-c SAND, some f-subrounded gravel and 0.0 3 sandstone fragments (wet) 0.1 SS 4 S 5. 0.0 6 0.0 8 2 SAA-more dense, compact, increased sandstone fragments 0.0 9 0.4 5 3 α 0.1 9 f-m SAND lens from 3.5-3.7' 0.2 7 11/2/2009 3:08:02 PM 0837 Drive casing to 4.0', Light brown f-c SAND and GRAVEL, some silt (wet) 0.2 8 ream hole with roller bit 0.7 \mathcal{D} 10 SS 5 4 Collect env. sample 0.7 BH-08-38_5.5-6.0 at 0730 on Ò 0.7 4/25/08 5 Light gray f-m SAND, loose (wet) 6 0850 Oleum leak on site near 0.5 SS DATA4\2568401\DATA FROM PHILLY\OFFICE DATA\GINT LOGS\INDSPEC BORING LOGS.GPJ Dark brown f-c SAND and GRAVEL, some silt (wet) 5 boring - left creek to South Ð 0.6 Gate 6 7 4 0 0.7 1000 Return and continue 5 boring ε Some black staining / Slight 0.2 5 Dark gray f-m SAND, loose (wet) odor 6.0-8.0' 8 0.5 1015 Drive casing to 8.0', Dark gray-brown silty f-c SAND and GRAVEL (wet) ream hole with roller bit \mathcal{D} 0.4 5 9 2 4 0.5 8 0.4 9 10 Some staining / no odor SAA 0.6 10 10.0-12.0' \mathcal{D} 0.7 10 9 9 0.5 Becoming more dense, increasing sandstone fragments 12 0.4 16 1034 Drive casing to 12.0', 0.1 SAA 15 ream hole with roller bit 0.2 14 13 9 0.1 Red mottling 13 0.2 11 Collect BH-08-38 15.0-15.5 at 1.5 SAA 13 0740 on 4/24/08 ω <u>∞</u> 0.6 10



Log of Boring BH-08-38 Sheet 2 of 2 Project Project No. East 2568412 Beazer/INDSPEC Properties 1426053.86 Location Elevation and Datum North Petrolia, Pennsylvania 1157.301464 NAVD 1988 620423.5027 Sample Data MATERIAL SYMBOL Remarks Depth Scale Number Recov. (in) Penetr. resist BL/6in Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Reading (ppm) 15 Black staining Light brown-orange f-m SAND, trace f-gravelly sandstone (moist) 1.3 SS 10 Ŋ No odor Black carbonaceous SHALE or COAL, loose ∞ 8 0.7 29 Light gray weathered SANDSTONE, some f-c gravel and sand and 16 silt (wet) 1058 Drive casing to 16.0', 0.9 SS 9 40 0 Dark gray weathered SHALE (wet) ream hole with roller bit 50/1 0.6 1105 END BORING @ 16'7" End of Boring @ 16.7 ft 17 0.5 (Refusal) 0.6 Backfill hole with bentonite 18 pellets Q:DATA42568401/DATA FROM PHILLY/OFFICE DATA/GINT LOGS\INDSPEC BORING LOGS. GPJ ... 11/2/2009 3:08:03 PM ... Report. Log - LANGAN ...Template LANGAN. GDT 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33



Log of Boring BH-08-39/MPZ-06 Sheet of 2 1 Project No. East Project Beazer/INDSPEC Properties 2568412 1426017.96 Location Elevation and Datum North Petrolia, Pennsylvania 1160.46 NAVD 1988 620113.58 Drilling Agency Date Started Date Finished 4/25/08 4/25/08 Pennsylvania Drilling **Drilling Equipment** Completion Depth Rock Depth Acker Scout Track Rig 18.7 ft 18 ft Size and Type of Bit Disturbed Undisturbed Core Number of Samples 2 7/8" OD Roller Bit 9 Casing Diameter (in) Completion 24 HR. Casing Depth (ft) First Water Level (ft.) 3.5" Temp Steel 0 $\mathbf{\Lambda}$ Drop (in) 30 " Casing Hammer Weight (lbs) Drilling Foreman 140 lb Safety Jim Lang Sampler 2" x 2.0' OD Split Spoon Inspecting Engineer Drop (in) 30<u>"</u> Sampler Hammer Weight (lbs) 140 lb Safety Bobby Huff / Kristen Ward Sample Data MATERIAL SYMBOL Remarks Depth Number Penetr. resist BL/6in Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Type LANGAN.GD Scale (ppm) 0827 Start boring Black-olive gray silty f-m SAND, some c-sand and f-gravel, loose 193 16 Black staining / strong sweet 202 odor 0.0-2.0' 14 SS ω 287 5 257 4 2 845 Gray and brown f-SAND, some c-sand and f-subrounded gravel and 18 sandstone fragments 769 24 SS 3 α 1410 Collect Report: Black f-c SAND, some f-subangular gravel and orange-brown 1092 22 BH-08-39_3.0-3.5 sandstone fragments from 3.9-4.0' \circ 444 Very strong, sweet odor, 12 stained 3.0-3.8' 11/2/2009 3:08:07 PM 635 0845 Don respirators, 12 suggested drillers to do the Olive-gray-black f-c silty SAND and f-GRAVEL, loose (wet) 144 11 same 9 5 0908 Drive casing to 4.0', 488 0 11 ream hole with roller bit Black staining 4.0-4.5' 651 18 \$ 6 SAA-some sandstone fragments 979 (DATA4/2568401/DATA FROM PHILLY/OFFICE DATA/GINT LOGS/INDSPEC BORING LOGS.GPJ 14 -increased density 7.6-8.0' 1420 Collect env. sample 1284 19 SS BH-08-39 6.5-7.0 \circ 4 4 117 Black staining 6.0-8.0' 17 38.4 13 \mathcal{D} 8 0948 Drill to 8.0' using mud 18.0 SAA- some f-gravel, trace clay (wet) 5 rotary 15.3 Ø 8 5 2 9 Black staining / slight sheen 45.6 10 8.0-10.0' 10.7 D 9 10 Sheen in slough Black f-c SAND and f-GRAVEL, some silt 11.3 10 1425 Collect env. sample P 3.8 BH-08-39_10.0-10.5 (slough) 8 4 9 2.8 -increased density 4.7 12 1018 Drill hole to 12.0' using Ò mud rotary Driller error- overdrilled SAA 16.3 12.0-13.0' 13 Ċ 2.9 SS 13 8 Black staining / slight odor SAA, some sandstone fragments 1.8 21 13.0-15.0' increased density with depth 4.2 25



Log of Boring BH-08-39/MPZ-06 Sheet of 2 2 **ENGINEERING & ENVIRONMENTAL SERVICES** Project Project No. East 2568412 Beazer/INDSPEC Properties 1426017.96 Location Elevation and Datum North Petrolia, Pennsylvania 1160.46 NAVD 1988 620113.58 Sample Data Remarks Depth Number Penetr. resist BL/6in Recov. (in) Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Scale Reading (ppm) 15 Light brown f-m SAND and GRAVEL and weathered SANDSTONE 3.8 38 fragments, trace silt, very friable, dense (moist) D 2.9 Some red motlling 38 6.5 ∞ 16 Poor recovery 45 Red mottling 50/5 1040 Refusal at 16.9' 17 Blue gray - Light gray highly weathered MUDSTONE, dense, friable 3.9 1100 hole collapsed (moist) Artesian conditions from 1.8 8.0-10.0', will not allow mud to 21 11.5 18 seal hole 0 27 50 Q:DATA42568401/DATA FROM PHILLY/OFFICE DATA/GINT LOGS\INDSPEC BORING LOGS.GPJ ... 11/2/2009 3:08:07 PM ... Report Log - LANGAN ...Template LANGAN.GD 1105 Drive casing to 9.0', 50/1 drill/ream hole to 17.0' using End of Boring @ 18.7 ft mud rotary past casing 19 Overdrilled to 17.5' 1154 Drive spoon from 17.5-18.7 20 1154 END BORING at 18.7' (Refusal) Single pizometer set at 10.0' 21 22 23 24 25 26 27 28 29 30 31 32 33



BH-08-40 Sheet Log of Boring of 2 1 Project No. East Project Beazer/INDSPEC Properties 2568412 1426015.78 Location Elevation and Datum North Petrolia, Pennsylvania 1165.71176 NAVD 1988 619997.5362 Date Started **Drilling Agency** Date Finished 4/28/08 Pennsylvania Drilling 4/29/08 Rock Depth **Drilling Equipment** Completion Depth Minute Man Portable Drill 17.8 ft Size and Type of Bit 4" OD Diamond / 2" Thinwall Diamond / 2 7/8" Roller Disturbed Undisturbed Core Number of Samples 9 Bit Casing Diameter (in) Completion 24 HR. Casing Depth (ft) First Water Level (ft.) 3.5" temporary casing 2 $\mathbf{\Lambda}$ Drop (in) 24" Casing Hammer Weight (lbs) Drilling Foreman Donut 70 lbs Jim Lang Sampler 2" O.D. Split Spoon Inspecting Engineer Drop (in) 24" Weight (lbs) Sampler Hammer 70 lbs Donut **Bobby Huff** Sample Data MATERIAL SYMBOL Remarks Depth Number Penetr. resist BL/6in Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Type Femplate LANGAN.GD Scale Reading (ppm) 4/28/08 1013 Begin boring D S S P CONCRETE w. Core 0.0-0.4' with 4.0" O.D. Dark brown silty f-c SAND and f-GRAVEL, some sandstone 0.3 3 diamond bit fragments (wet) 5 1038 Drive SS-1 0.4-2.0' Light gray - light brown m-SAND, some f-gravel and sandstone 0.7 12 fragments, loose (moist) 1.2 21 Report: Log - LANGAN ∇ 50/0 2 76.8 Reddish-black staining / strong Reddish-black to brown f-m SAND, some c-sand, f-gravel and 4 odor 1.9-4.0' sandstone fragments (wet) 76.1 6 SS 3 α ω Collect env. sample 27.6 11 BH-08-40_3.0-3.5 at 0955 on 110 4/29/08 8 11/2/2009 3:08:12 PM 1105 2" I.D. H.S.A. drilled to NO RECOVERY 53.5 10 0 4.0' 50/3.6 1305 Drive SS-3 4.0-4.9' CONCRETE (refusal) 5 CORE S No recovery α 1325 Drive 3.5" steel casing to 4.9' (top of concrete) Brown-black/ Olive-gray silty f-c SAND and GRAVEL, some 6 1347 Core 4.9-5.8' with 2" 14 sandstone fragments, loose (wet) Q:\DATA4\2568401\DATA FROM PHILLY\OFFICE DATA\GINT LOGS\INDSPEC BORING LOGS.GPJ O.D. diamond bit \mathcal{D} 1424 Ream core hole with 2 13 5.4 2 4 7/8" roller bit 4.9-5.8' 7 11 5.5 Some black staining / slight Ò odor 5.8-7.8' 6 Gray-brown clayey SILT, some f-c sand and f-gravel, soft (moist) 8 Slight odor 7.8-9.8' 2 8.9 2 9 1550 mud rotary with 2 7/8" 6.1 roller bit to 9.8' 5.1 9 Brown-gray-black f-c SAND, some silt, f-gravel and sandstone 10 Slight odor 9.8-11.0' 79 fragments (wet) 8 Collect env. sample Ð. 4.2 BH-08-40_10.0-10.5 at 1000 11 on 4/29/08 9 7 1.8 12 0.7 17 12 0.4 8 0.6 4 SS 7 13 Brown-gray clayey SILT, trace f-c sand, soft (wet) 0.5 5 0.4 6 1600 Stop drilling for the day SS Gray clayey SILT, some f-gravel and sand, micaceous (wet) 1.4 5 4/29/08 0730 Resume drilling 8 ω 0.6 Hole collapsed to 10.0', redrill



Log of Boring BH-08-40 Sheet 2 of 2 Project No. East 2568412 Beazer/INDSPEC Properties 1426015.78 Location Elevation and Datum North Petrolia, Pennsylvania 1165.71176 NAVD 1988 619997.5362 Sample Data Remarks Depth Scale Recov. (in) Penetr. resist BL/6in Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Reading (ppm) 15 0900 drive SS-8 13.8-15.8' Gray clayey SILT, some f-sand (wet) 0.6 SS Collect env sample 8 ω BH-08-40_15.0-15.5 at 1005 0.6 on 4/29/08 16 Brown f-c SAND, some clay and gray-black sandstone fragments, 1.0 micaceous (wet) 0.7 9 12 17 6 0.4 10 Increasing sandstone fragments with depth 18 End of Boring @ 17.8 ft 4/29/08 0920 END BORING Q:DATA42568401/DATA FROM PHILLY/OFFICE DATA/GINT LOGS\INDSPEC BORING LOGS.GPJ ... 11/2/2009 3:08:12 PM ... Report. Log - LANGAN ...Template LANGAN.GDT @ 17.8' (Refusal) Backfill hole with bentonite 19 pellets 20 21 22 23 24 25 26 27 28 29 30 31 32 33



Log of Boring BH-08-41/ MPZ-07A/B Sheet of 2 1 Project No. East Project Beazer/INDSPEC Properties 2568412 1426014.05 Location Elevation and Datum North 620044.4127 Petrolia, Pennsylvania 1165.741714 NAVD 1988 Drilling Agency Date Started Date Finished 4/29/08 4/30/08 Pennsylvania Drilling Rock Depth **Drilling Equipment** Completion Depth Minute Man Portable Drill 20 ft 21.8 ft Size and Type of Bit 3 3/4" OD Diamond / 2" Thinwall Diamond / 2 7/8" Disturbed Undisturbed Core Number of Samples Roller Bit 9 N/A N/A Casing Diameter (in) Casing Depth (ft) Completion 24 HR. First Water Level (ft.) 3 3/4" Temporary Steel Casing $\sqrt{}$ Drop (in) 24" Drilling Foreman Casing Hammer Weight (lbs) Donut 70 lbs Jim Lang Sampler 2" O.D. Split Spoon Inspecting Engineer Drop (in) 24" Weight (lbs) Sampler Hammer Donut 70 lbs Dennis Webster / Bobby Huff Sample Data MATERIAL SYMBOL Remarks Depth Number Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Type emplate LANGAN.GD Scale (ppm) 1010 Start coring concrete CONCRETE coarse aggregate Tried SS at 1.4', refusal at 1.7', no recovery 1040 Cored concrete from 1.7-2.0' 1330-1350 Cored to 3.0'. reamed hole 2.0-3.0' 2 1416 attempt SS at 3.0', refusal 1424 Core 3.0-4.0' 1435 Attempt SS- cannot 3 advance beyond 3.5' 1440 Core 3.0-5.0', recovered approx 12.0" concrete 1455 Attempt SS at 5.0', refusal at 5.3' (7 blows) 1512 Spin casing with 3.75" O.D. Diamond bit to 5.0' 5 1530 Ream hole to 5.8' with roller bit END 4/29/08 at 1600 @ 5.8' 0826 4/30/08 RESUME Black f-c silty SAND, some f-gravel, loose (wet) 6 9 45.7 Drive SS-1 from 5.8-7.8' Q:\DATA4\2568401\DATA FROM PHILLY\OFFICE DATA\GINT LOGS\INDSPEC BORING LOGS.GPJ Strong odor, black staining 10 12.9 Collect env. sample ω 7 BH-08-41_6.0-7.0 on 5/1/08 at 6 44.6 8 29.2 8 5 Black staining / strong odor 7.8 Gray-brown-black f-c silty SAND and GRAVEL, some light gray/dark 8.0-8.6' gray sandstone fragments (wet) 3 6.8 1" f-m sand sens 8.5-8.6' 5 D Some staining / slight odor 9 16.6 8.6-9.8 Becoming more dense, 15.5 3 increasing sandstone SS 10 14 fragments Gray-brown f-c silty SAND, some f-gravel and sandstone fragments, 3.1 0900 Spin 3.75" steel casing trace clay (moist) to 9.8' 15 2.7 Ø increasing fines with depth 7 က 0930 Mix drilling mud 21 4.1 1000 Ream hole to 9.8' 1035 Drive SS-3 9.8-11.8' 15 3.7 Very slight odor 23 2.2 SAA to 13.5' Ö 27 2.9 5 13 30 3.0 Olive gray - brown f-c SAND and GRAVEL and weathered 15 0.7 SANDSTONE fragments, dense (moist) 1105- Mud rotary to 13.8' w/ 0 10

1.0

0.7

4

12

roller bit

Black carbonaceous staining

13.8-14.0', no odor



roject		Project No.							East		
ocation	Beazer/INDSPEC Properties	Elevation a	nd Da		2568	3412			North	142	6014.0
Journal	Petrolia, Pennsylvania	Liovation a	ila Di	atum	116	5.7417	'14 NAVD 1	988	North	6200	44.412
MATERIAL	Sample Description	Depth Scale	Number	Type		Penetr. resist aldu BL/6in Q	PID Reading (ppm)	(Drillin Fluid Lo		narks Depth of Ca g Resistan	asing, ce, etc.)
	Grayish brown silty f-SAND, some f-subrounded gravel and c-sand and clay, soft (moist)	15 -	2	SS		15 14	1.1 0.8	BH-08	ct env. s 3-41_15 3 at 082	.0-15.5 d	on
	SAA, some clay, trace sandstone fragments	- 16 - - -				11 12	1.0 1.6				
	Black-gray silty f-m SAND, some c-sand and f-subrounded gravel and sandstone fragments, dense (moist)	17 -	9	SS		18 17	0.9	Black 1250	m-sand	is 17.0-1 in shoe, th mud a	, no od
	SAA, less dense (wet)	- 18 - - - - - 19 -		SS	17	15 21 30	0.6 0.5 0.7			.0 17.6 S-7 17.8	-19.8'
		- 20				38	0.2	4205	Drive St	S-8 19.8	94 01
	SAA, increasing ESHBrounded Pray & 2grid and sandstone fragments	- - 21 -	8	SS	14	30 26 25	1.4 1.9 1.1	Collect BH-08 5/1/08 Increa	ct env. s 3-41_20 3 at 083 asing bro	ample .5-21.0 (on
	Brown weathered m-grained SANDSTONE, friable (moist)		9	SS	4.5	50/4		1415	Ream h Drive 2. g to 20.0	ole to 21 75" O.D. o' to prev	steel
		- 23 - - - - 24 -						1449 O.D. r 4/30/0	Ream to	30 END	
		25 -							`	,	
		- - - 26 -									
		- - 27 -									
		- - 28 -									
		- - 29 -									
		- 30 -									
		31 -									
		- 32 -									
		_ 33 -	1								



LANGAN.GD

OGS\INDSPEC BORING LOGS.GPJ

DATA FROM PHILLY\OFFICE DATA\GINT

Log of Boring BH-08-42/MPZ-08A/B Sheet of 2 1 Project No. East Project Beazer/INDSPEC Properties 2568412 1426013.74 Location Elevation and Datum North Petrolia, Pennsylvania 1165.79 NAVD 1988 620151.3332 Drilling Agency Date Started Date Finished 5/2/08 Pennsylvania Drilling 5/6/08 **Drilling Equipment** Rock Depth Completion Depth Minute Man Portable Drill 23.5 ft 22.8 ft Size and Type of Bit 3 3/4" OD Diamond / 2" Thinwall Diamond / 2 7/8" Disturbed Undisturbed Core Number of Samples Roller Bit 9 N/A N/A Casing Diameter (in) Completion 24 HR. Casing Depth (ft) First Water Level (ft.) 3 3/4" Temporary Steel Casing 5.8 $\sqrt{}$ Drop (in) 24" Casing Hammer Weight (lbs) Drilling Foreman Donut 70 lbs Jim Lang Sampler 2" O.D. Split Spoon Inspecting Engineer Drop (in) 24" Weight (lbs) Sampler Hammer 70 lbs Donut Dennis Webster / Bobby Huff Sample Data MATERIAL SYMBOL Remarks Depth Number Penetr. resist BL/6in Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Type Scale (ppm) 0955 5/2/08 Start Boring P & 4 CONCRETE coarse aggregate S Core through concrete Gray f-c gravelly f-c SAND, some silt (wet) 0.0-4.5" 4 SS 1005 Drive SS-1 4.5"-2.0' 0.0 Red staining 1.5-2.5', no odor Clean hole with 2" T.D.HSA to 4 Reddish yellow clayey f-c GRAVEL, some f-c sand and silt (wet) 0.0 3 2 Spoon and auger refusal @ 0.0 9 2.5', ream with 2 7/8" foller to 0.0 CONCRETE, coarse aggregate with 1/2 - 1" rebar Reddish brown ream water 3 Core 2.5-4.0', no recovery 1130 Spin 3 3/4" casing to 4.0', casing gets stuck 2.5' 1146 pull casing, concrete core iammed in casing 2.0" 1151 Stop 5/2/08 @ 4' (2" core) / 2.5' (3 3/4" core) 5 0900 5/5/08 Resume coring with a 6" bit from 0.0-0.6' Installed 6" casing to 2.0' ∇ 1100 used 4.0" NX core from 6 2.0-4.8' then from 4.8-5.9' 7 Gray-brown silty SAND, some f-c sandstone fragments, trace clay 5.4 1400 advanced SS-2 @ 7.0' 1530 Spin casing to 10.0' 3.8 1600 Breakdown, stop work 24 for the day 22 8 \sim Black-gray sandy CLAY, some f-c sandstone fragments, trace silt 5.7 23 and coal fragments (wet) 6.7 21 9 Gray gravelly CLAY, tight/firm, some f-c sand, trace silt, coal and 5.7 25 sandstone fragments (moist) 4.2 27 က 22 10 Strong odor 10.0-14.0' 2.1 37 0800 5/6/08 Resume boring Gray-black f-c SAND and GRAVEL, some clay, trace silt (wet) 1.7 22 3.5 Ð 20 2.7 40 20 4 Ė Strong odor throughout 1.2 20 1.2 Black silty CLAY, some f-c sand and gravel (wet) 22 13 4.3 0830 Roller bit down to 13.0' 12 1000 begin SS-5 @ 13.0' 12.1 Strong odor 13.0-15.0' 12 4 2 Black silty f-c SAND, some f-c gravel, trace clay (wet) 15.7 15 3.7

20



roject		Project No.							East		
acation	Beazer/INDSPEC Properties	Elevation a	ad Da			3412			North	14260)13.7
ocation	Petrolia, Pennsylvania	Elevation a	na Da	atum		5.79 N	AVD 1988		North	62015	1.333
٠ اـ	l				Sa	mple D	ata				
MATERIAL SYMBOL	Sample Description	Depth Scale	Number	Type	Recov. (in)	Penetr. resist BL/6in	PID Reading (ppm)	(Drilliı Fluid Lo	Rem ng Fluid, D ss, Drilling	AFKS epth of Cas Resistance	ing, e, etc.)
VV	SAA	15 –				15	0.0				
		- :		SS	~	34	0.0	Slight	odor fro	m 15.0-1	7.0'
		- 16 -	9	SS	18	33	0.0				
1/		- :	1			29	0.0				
	Light brown-black f-c SAND, some c-gravel, trace clay, increasing	- 17 -				28	0.0			t down to	17.0
	light brown sandstone fragments (wet)		}			20	0.0	17.0-		S-7 from	
	Light brown-black-gray gravelly f-c SAND, some clay, trace silt (wet)	- 18 -	^	SS SS	18	19	0.0	Slight	odor fro	m 17.0-1	9.0'
			1			28	0.0				
	SAA	_ 19 -				24	0.0		roller bit		
1//		-	1				0.0	1125	SS-8 fro	m 19.0-2	1.0'
	SAA, increasing sandstone fragments	_ 20 -		SS	20	29 27	0.5	1200	Break fo	r lunch	
		- :	1			28	0.0				
	Black-brown f-c SAND and GRAVEL consisting of ligh brown	_ = 21 -					0.0	1315	Spin cas	sing to 12.	.0'
D. Z	sandstone fragments, some thin lenses of black silty f-m SAND (wet)	- :	1			22	0.0	140 00	101 20.0	20.0	
	(wet)	- 22 -	6	SS	20	25	0.0	Weath	nered be	drock @	22.8
5]			18	0.0	1400	Roller bi	t to 23.5'	
	Light gray weathered MUDSTONE (wet)	- 23 -	10	SS	4	24 50/3	0.0				
•••••	End of Daving @ 22.5 #	-	Ė					ENDI	BORING	6 @ 23.5'	
	End of Boring @ 23.5 ft	_ 24 -	1					(Refu		-	
		<u> </u>	1					Set m	ultilevel	pizometer at 22.5 an	S d 10
		25						ıvı⊢∠-	UI AND S	n 22.0 all	u IZ
		E :	1								
		- 26 -	1								
		[]]								
		- 27 -	†								
		- 28 -									
		Ė :	1								
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		30 -]								
			1								
		21 -	1								
		- 31 -	1								
		<u> </u>	1								
		- 32 -									
		<u> </u>	1								
		_ 33 -	1								



	ENGINEERING & ENVIRONMENTAL SERVICES Log		Boring			BH	45F		Sheet	1	of	8
Project	Degrar/INDSDEC Proportion	Pr	oject No.			256	0440			East	1406	011 565
Location	Beazer/INDSPEC Properties	Ele	evation a	nd D	atun		8412			North		211.565
	Petrolia, Pennsylvania	Ļ				115	6.06 N	IAVD 1988			622	401.404
Drilling Ag	gency Pennsylvania Drilling	Da	ate Starte	d		7	/28/04		e Finished		8/13/04	
Drilling Eq		Co	ompletion	Dep	oth		120/04		k Depth		0/13/04	
0: 1	Acker Hybrid Drill Rig/CMI Air Rotary Rig	_				D:-4	177 ft		المصادرة المصاد		18 ft	
	Type of Bit 20" Hollow Stem Auger, 16", 12", 6", & 4" Roller Bit	Νι	umber of	Sam	ples	Dist	urbed	N/A	Jndisturbed	N/A		N/A
Casing Di	ameter (in) Casing Depth (ft) 16", 12", 8", 4" Steel 21', 74.1', 90.25', & 143'	W	ater Leve	l (ft.))	First		8.2	Completion	7.2	24 HR.	8.1
Casing Ha		Dr	illing Fore	emai	n	1 <u></u>	•	0.2	<u></u>		<u> </u>	<u> </u>
Sampler	NI/A	Ins	specting E	nair		arl D	ye					
Sampler F	Hammer N/A Weight (lbs) N/A Drop (in) N/A]""	opounig .			enni	s Webs	ster				
ilaL OL		nin/ ft	Depth	<u></u>	ı		mple Da			Re	marks	
MATERIAL	Sample Description	Coring min/ft	Scale	Number	Type	(in)	Penetr. resist BL/6in	PID Reading (ppm)	(Dri Fluid I		I, Depth of Caling Resistan	asing, ice. etc.)
311/2: .311/2:	Black topsoil, grass, some subangular gravel and roots (moist)	8	0 -	z	'	1	Е-ш	(ppiii)	Hollo	w sten	n auger/NΣ	(Rock
17.7.7.7			= = =		'	1					air rotary oned to con	
	Dark brown to black silty CLAY, trace fine sand (moist)		E ' 3		'	ŀ			\ the t	riple ca	sed well.	
			2 -		2	l			sum	mary M	IW-45F fo	
			Ė :	-	AUGE	ł			deta	iled des illed we	scription of II.	the
			3 -		<	ŀ						
			4 -			ł						
			Ė :		'	l						
			5 -									
			Ė . :		'	1						
	Dark brown to black silty CLAY, w/mixed		6 -		'	1						
	subangular/subrounded gravel, trace fine sand, some sandstone fragments (moist-wet)		7 -		2	1						
	<u>-</u>			7	AUGER	1						
	₹		8 -		¥	1			Satu	rated @	8.25 fee	+
			- 9 -			1			→ Mild	chemic	al odor an	d sheen
	Black silty SAND, subangular/subrounded gravel, some clay, trace sandstone fragments (wet)		E 9 -		'	1					om 8.5 to and surface	
0	trace sandstone tragments (wet)		10							Ü		
8			_ 11 -									
			12 -		2							
			<u> </u>	က	AUGER							
			13		A							
2			Ė :									
			- 14 -									
			_ 15 -	1								
			Ē :	1								
			16 -	1								
			[17	}	~							
			<u> </u>	4	AUGER							
	Brown to reddish brown SANDSTONE, micaceous, fine to		18 -	1	A							
	medium grained, weak hardness & strength, deep weathering,		<u> </u>	1								
	highly fractured, trace amounts of silty sands (wet)		_ 19 <i>-</i>	1								
<u> </u>			F .	1	Ι.							



Log of Boring BH45F Sheet 2 of 8 Project No. East Project Beazer/INDSPEC Properties 2568412 1426211.565 Location Elevation and Datum North 1156.06 NAVD 1988 622401.404 Petrolia, Pennsylvania Sample Data Coring min/ Remarks Depth Scale Number Penetr. resist BL/6in Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Reading (ppm) 20 21 Terminate 21 inch hollow stem RQD=30¹⁹42" =71% REC=39"/42" =93% auger, set 16 inch steel casing, began NX Rock 22 Coring. Very smooth coring, fast 23 rotation speed. 24 :30 25 Light gray SHALE, micaceous, fine grained, weak harness & strength, deep weathering, highly fractured (wet) :32 26 :39 27 REC=118"/120" =98% 28 RQD=65"9"20" =54% :43 Same as above except increased amounts of fine grained sand. :42 29 :49 30 Dark black COAL, soft, weak, highly fractured (wet) :57 31 :57 32 Dark black return water continued with smooth coring and fast rotation speed. 1:29 33 LOGS\INDSPEC BORING LOGS :35 34 Dark gray SHALE, trace clay seems, very fine grained, weak harness & strength, moderate weathering, highly fractured (predominately 0-15 degrees) 1:30 35 1:30 36 1:03 37 Q:\DATA4\2568401\DATA FROM PHILLY\OFFICE DATA\GINT 1:13 38 REC=70"/120" =58% RQD=45"/120" =38% 39 Same as above except increased amounts of close horizontal fractures (predominately 0-15 or 50-65 degrees) 1:45 Binding and jumping of drill rods, slowed rotation speed. 2:58 2:56 3.08 43 Smooth/steady coring continued. 3:17



BH45F Sheet Log of Boring 3 of 8 Project No. East Project 1426211.565 Beazer/INDSPEC Properties 2568412 Location Elevation and Datum North 1156.06 NAVD 1988 622401.404 Petrolia, Pennsylvania Sample Data 2:19 2:19 Remarks Depth Penetr. resist BL/6in Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Scale Reading (ppm) Good water return. 2:56 46 Light to dark gray SANDSTONE, trace clay stringers, fine grained, low hardness, weak strength, moderate weathering, moderate fracturing (0-20 degrees) 1:22 1:27 48 REC=108.5"/120" =90% RQD=90.5"/120" =75% Gray CLAYSTONE, fine grained, friable hardness, friable strenth, deep weathering, crushed fracturing 2:10 :56 1:10 :51 52 Binding/chattering of drill rods, Same as above except interbedded sandstone bands slowed rotation speed. 53 1:15 1:22 54 Smooth drilling/steady rotation Dark gray to black CLAYSTONE, trace sandstone lenses, very speed with good water return fine grained, friable hardness, friable strenth, deep weathering, (gray to black). crushed fracturing 1:22 55 :51 56 1:02 57 Light brown to gray SANDSTONE, medium grained, moderately RQD=117.5"/120" =98% REC=120"/120" =100% hard, moderately strong, moderate weathering, close to 58 moderate fracturing (predominately 0-15 degrees) 1:12 59 Dark gray to black CLAYSTONE, trace sandstone lenses, very fine grained, friable hardness, friable strenth, deep weathering, crushed to moderate fracturing (0-35 degrees) 1:05 60 1:02 61 1:27 62 1:01 63 1:15 64 Light brown and gray water return. 65 REC=120"/120" =100% RQD=103"/120" =86% 1:17 66 1:40 67 68 .56 :57 69



Log of Boring BH45F Sheet 4 of 8 Project No. East Project Beazer/INDSPEC Properties 2568412 1426211.565 Location Elevation and Datum North 1156.06 NAVD 1988 622401.404 Petrolia, Pennsylvania Sample Data Coring min/ Remarks Depth Scale Penetr. resist BL/6in Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Reading (ppm) Jumping/chattering of drill rods. REC=120"/120" =100% RQD=103"/120" =86% :53 1:03 1:01 73 Continued with good water return. 1:08 Set bottom of 12 inch steel casing. :55 75 :57 1:11 REC=120"/120" =100% RQD=106"/120" =88% 1:02 78 Dark gray SHALE, highly carbonaceous, carbon stringers, very fine grained, smooth, moderately :57 79 Light gray LIMESTONE, highly fossiliferous, low hardness, 1:02 80 moderately strong, slightly weathered, close fracturing (predominately 0-25 degrees) 1:30 Very choppy coring, slowed rotation speed from 81 to 85 feet below ground surface. 1:39 82 1:57 83 1:40 84 1:30 85 1:39 86 Smooth coring, increased rotation speed. 1:57 87 REC=120"/120" =100% 1:40 88 RQD=97"/120" =81% 4:22 89 5:05 90 Set bottom of 8 inch steel casing. 3:39 Dark gray to black SHALE, carbonaceous, fossiliferous, very fine grained, moderate hardness, moderate strength, moderate fracturing (0-15 degrees) 5:00 92 93 A drill rod was dropped down hole. Air rotary had to be performed to remove rod from 94 93 to 96.5 feet below ground surface.



Log of Boring BH45F Sheet of 8 5 **ENGINEERING & ENVIRONMENTAL SERVICES** Project Project No. East Beazer/INDSPEC Properties 2568412 1426211.565 Location Elevation and Datum North Petrolia, Pennsylvania 1156.06 NAVD 1988 622401.404 Sample Data . Coring min/ Remarks Depth Scale Penetr. resist BL/6in Number Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Reading (ppm) 95 96 NX Rock Coring continued. 97 98 Smooth coring and steady REC=72"/78" =92% RQD=64"/78" =82% rotation speed. 99 Template LANGAN.GDT 2:01 100 Same as above except increasing amounts of carbon stringers and pyrite 1:32 1:28 102 103 1:32 Good water return (black to gray). 1:37 104 1:11 ─ 105 106 :52 Dark black COAL, very soft, weak, low hardness, highly REC=106"/120" =88% RQD=105"/120" =88% fractured 1:22 107 9 :59 108 1:29 109 :53 110 Very smooth and fast coring. Black water return. 1:00 1:07 - 112 1:00 113 :42 114 REC=120"/120" =100% 115 RQD=85"/120" =71% Light gray to black SANDSTONE, fine to medium grained, some thin bands of marine shale, moderately hard and strong, fractures occuring along thin bands of shale :40 116 1:32 1:37 118 1:21 119



Log of Boring BH45F Sheet of 8 6 **ENGINEERING & ENVIRONMENTAL SERVICES** Project Project No. East 1426211.565 Beazer/INDSPEC Properties 2568412 Location Elevation and Datum North Petrolia, Pennsylvania 1156.06 NAVD 1988 622401.404 Sample Data Coring min/ Remarks Depth Scale Penetr. resist BL/6in Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Reading (ppm) :50 121 :52 122 123 1:01 124 1:07 125 1:07 - 126 REC=118"/120" =98% RQD=79"/120" =66% 1:32 7 128 :59 1:00 129 _ __ 130 1:04 131 132 :52 133 1:03 - 134 1:10 - 135 - 136 1:01 REC=115"/120" =96% RQD=95"/120" =79% 1:05 137 1:27 138 139 1:40 1:47 1:33 1:30 143 Gray/white SANDSTONE, coarse grained, hard, strong, thinly lamineated with black medium grained sands, evident rip up Set bottom of 4 inch steel casing. clasts, some thin bands of white fine grained sands moderately 4 1:27 fractured



Log of Boring BH45F Sheet 7 of 8 ENGINEERING & ENVIRONMENTAL SERVICES Project Project No. East 1426211.565 Beazer/INDSPEC Properties 2568412 Location Elevation and Datum North Petrolia, Pennsylvania 1156.06 NAVD 1988 622401.404 Sample Data . Coring min/ Remarks Depth Scale PID Reading (ppm) Recov. (in)
Penetr. resist
BL/6in Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Slow coring and rotation speed due to more competent rock. 146 1:40 REC=112"/120" =93% RQD=93"/120" =78% 1:47 148 1:48 149 2:07 150 2:10 2:02 152 153 2:17 2:12 154 1:47 - 155 1:32 156 REC=111"/120" =93% RQD=89"/120" =74% 1:93 1:30 158 1:27 159 1:35 160 1:47 - 161 1:33 - 162 1:29 163 164 REC=120"/120" =100% RQD=115"/120" =96% 165 166 167 168 1:17 169



Log of Boring BH45F Sheet 8 of 8 Project No. East 1426211.565 Beazer/INDSPEC Properties 2568412 Location Elevation and Datum North Petrolia, Pennsylvania 1156.06 NAVD 1988 622401.404 Sample Data 1:23 Coring min/ ft Depth Scale Remarks PID Reading (ppm) Recov. (in)
Penetr. resist Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) 1:07 1:41 172 1:19 - 173 Q:DATA42568401/DATA FROM PHILLY/OFFICE DATA/GINT LOGS\INDSPEC BORING LOGS.GPJ ... 11/22009 3:08:30 PM ... Report Log - LANGAN ...Template LANGAN.GDT 175 176 Terminated borehole at 177 End of Boring @ 177 ft feet below ground surface. 178 179 180 181 182 183 184 185 186 187 188 189 190 191 192 193 194



	ENGINEERING & ENVIROI	VMENTAL SERVICE	ES	Log	of E	Boring			ВН	61A			Sheet	1	of	1
Project					Pr	oject No).							East		
Lasstian	Beazer/INDSPEC	Properties								8412				Nanth		26047.507
Location	Potrolio Poppoulu	ronio			E	evation a	and D	aturr		58.81 N	IAV/D 1	000		North		20008.185
Drilling Agend	Petrolia, Pennsylv	ariia			Da	ate Start	ed		110	0.011			Finished		02	20006.165
	Pennsylvania Drill	ing Company							5	5/20/04					5/20/04	
Drilling Equip	ment				Co	mpletio	n Dep	oth				Rock	Depth			
Size and Type	Acker Hybrid Drill	Rig							Diet	16 ft urbed		He	ndisturbed		16 ft Core	
1	6" OD Hollow Ster	m Auger			Nι	ımber o	f Sam	ples	Disi	uibeu	8			N/A	Core	N/A
Casing Diame	eter (in) 4" Steel/2" PVC R	Pisor	C	asing Depth (ft) 0.50'/0.75'	W	ater Lev	el (ft.))	Firs		6.5		ompletion	7.9	24 HR.	7.6
Casing Hamm		Weight (lbs)	N/A	Drop (in) N/A	Dr	illing Fo	rema	n	<u> </u>	_	0.5		<u>¥</u>	1.9	<u>*</u>	7.0
Sampler	IN/A	0	IN/A	IN/A	L				Earl D)ye						
Sampler Ham	2" x 2.0' OD Split	Weight (lbs)		Drop (in)	Ins	specting	Engi									
	Auto_		140 lbs	30"			1	L		s Webs		son F	lanna			
MATERIAL	S	ample Descript	tion			Depth	per	l e	١.	1 1	PII				marks	Casina
MAT SYR		arripic Descrip	don			Scale	Number	Type	Recov.	Penetr. resist BL/6in	Read (ppr		Fluid	Loss, Dril	ling Resist	Casing, tance, etc.)
_	lack ASPHALT, sub-anç					E 0 -	-	T	⇟	4	0				samplin	
Li	ight and dark brown silty	CLAY, trace as	phalt (dry))		<u> </u>	₫_	SS	9	5	0			ormed.	i auger c	drilling was
						Ė '	= 1	0		8	1.7				nstruction 1W-61A	
						_ 2	1	-	-	4	0		deta	ailed des	scription	
						E	=	SS		4 4	0			alled we		ell screen at
	ark brown and light brow	un CII T trace or	and (yan)	moiat)		- 3	7	SS	12	6	0		1 fo	ot below	v ground	l surface.
	ark brown and light brow	vii SiLi, tiace sa	and (very	moist)		Ē,	=	1		6	0			есtеd В 435.	H61A-0	72004_1-2
						- 4	=			2	2.2					
C	OAL fragments, increas	ing gravel conte	ents (moist	t)		- - 5	ص ج	SS	2	3	0					
						-	=	SS	∄`	4	0 3.4					
	ark brown poorly graded	d GRAVEL with	coal flakes	s. trace sand		6	╪	+		5	3.2					
	vet)			.,	$\overline{\lambda}$	Ė	=	SS	∄	6	3.8	8	T	ected 31A-072	2004 5.5	5-6.5 at
					7	<u></u> 7	<u> </u>	SS	18	7	0		144	2.	_	
					<u>*</u>	 	1			7	0				0) 6.5 fee	
	ark gray poorly graded (3RAVEL (wet)				E	=	SS		6	3.8			ıy cnemi erved.	ical odor	and sheen
						_ 9	ري ا	SS	24	6	0					
	ight brown to tan mediur	m-grained SANC	OSTONE f	ragments (wet)		F	=			5 5	0					
¥	g	g		raginaria (irai)		10	╁			9	0					
						Ē ,,	Ŧ.,	SS	4	9	0					
3						F 11	9	S	24	7	0					
		h. CDA\/EL_tra-		-:-4\		12	1	1		8	0		Split	t spoon	rofucal	
	rown poorly sorted sand	y GRAVEL, trac	e clay (mo	oist)		-	=		1				ence	ountered	d at 12 f	eet below
S . O						13	-	쏦	1				grou	ınd surf	ace on 8	5/20/04.
						Ė	3 60	UGE	1							
						<u></u> 14	=	Α,	l							
						15	1									
						<u> </u>	4	ER	1						of 2 inch 6 feet be	n well slow ground
	ight brown medium grain		#Fr(dn/)			16	14	9	╙				surf			
	ight brown mediயாருருர்	Bound @ 46	5 '1t uly)			Ė	=	AU	1							
<u> </u>						17	+		1	\vdash						stem auger
						F	F						drilli surf	ng at 17 ace wh	7 feet be ere refu	low ground sal was
0084(- 18	7								d on 5/2	
K						<u>-</u> 19	Ē									
Ĭ.						Ė .	=									



	ENGINEERING & ENVIROR	NMENTAL SERVICE	ES .	Log	of E	Boring			вн	61B			Sheet	1	of	2
Project					Pr	oject No								East		
Location	Beazer/INDSPEC	Properties			FI	evation a	nd D	atun		8412				North	142	6046.481
Location	Petrolia, Pennsylv	vania			"	Evalion e	iiiu D	aturi		58.81 N	AVD 1	1988		NOILII	62	0003.698
Drilling Ag					Da	ate Starte	ed						Finished			
Dallia - E	Pennsylvania Drill	ling Company						. (1)	5	5/20/04		D. d.	D II.	5	5/21/04	
Drilling Eq	• •	Dia/CMI Air Date	on / Dia			ompletion	n Dep	oth		21 #		Rock	Depth		22 f	
Size and 1	Acker Hybrid Drill Type of Bit	Rig/Civii Ali Rota	ary Rig		١		0		Dist	31 ft turbed		Ur	ndisturbed		23 ft Core	
Casing Di	10" OD Hollow St	em Auger/6" OD		ing Donth (ft)	Nu	ımber of	Sam	ples		.4				/A	24 LID	N/A
Casing Di	ameter (in) 8" Steel/4" PVC R	₹iser	1	ing Depth (ft) 7.00'/15.50'	W	ater Lev	el (ft.))	Firs		9		ompletion 5	5.9	24 HR.	5.7
Casing Ha	ammer N/A	Weight (lbs)	N/A	Drop (in) N/A	Dr	illing For	remai						_	•	_	
Sampler	N/A				Inc	specting	Engir		Earl D	уе						
Sampler F		Weight (lbs)	N/A	Drop (in) N/A	┨""	specing	Liigii		lason	Hanna	1					
7.	1071		14// (14/71				,		mple Da				Da		
MATERIAL	Sa	ample Descripti	tion			Depth Scale		Туре) § @	Penetr. resist BL/6in	PI Rea		(Drillin		marks Depth of	Casing, ance, etc.)
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	ASPHALT Dark brown silty CLAY, tr	race cand grovel	and asphall	t (moiet)		ŧ	_								auger a	nd air rformed.
	Dark brown silly CLAT, ti	ace sand, graver	anu aspnan	t (moist)		- - 1 -	3		l				1		struction	
						E	=		l				summ	ary M	W-61B f	or a
						_ 2 -	7	GER	ŀ				detaile		cription (of the
						Ē,] -	AUG	ŀ							
	Dark brown SILT, trace s	and and gravel (n	moist)			- 3 -	3	4	l							
						- 4 -	1									
	Dark gray silty CLAY, trac	ce sand and grave	el (verv moi	ist)		Ė .	=		1						al odor a	nd sheen
	Dank gray only OD (1, trac	so cana ana gravi	or (vory mor			_ 5 -	<u> </u>	+	1				observ	ed.		
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						F _	=		1							
						F ′ -	, F	AUGER	1							
	Tan SANDSTONE frager	nents (dry)				<u>-</u> 8 -]	AU	1				Augor	oncoi	intorod r	esistance
						-	1		l							nd surface.
3					$\overline{\lambda}$	9 -	1		l				Slow r	otatior	speed	of auger
	Dark gray silty CLAY, fine	e to medium grair	ned sand (m	noist)		Ė	=		l				f		red san	dstone
		-				10 -	<u> </u>						Satura		9 feet b	elow
						- - 11 -	=						ground	d surfa	ice.	
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	Light brown sandy CLAY	(/v.ot)				- 12 -	3	2								
	LIGHT DIOWH Sandy CLAT	(wet)				Ē	m [1							
						13 -	-	A								
						Ē	=		1							
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						- - 15 -	1						Set to	of 4	inch wel ow grou	l screen at
	Ton and our Carri	IDOTONE "		d		<u> </u>	_	2					surfac	e.	•	
	Tan and gray quartz SAN hardness, weak strength,	ו כטו. ONE, mediu , deep weatherinc	ırn grained, i g, highly frac	moderate ctured (wet)		- - 16 -	4	JGER	l							em auger ow ground
	. .		,	, ,		Ė	=	AUG					surfac	e on 5	/20/04.	_
	Light brown fractured SA	NDSTONE w/trac	ce dark gray			17 -	+	+							of 8 inch feet bel	steel ow ground
	medium grained, modera weathering, highly fractur	ite hardness, wea	ak strength,	deep		F	F	R	\parallel				surfac	e.	otary at	_
	weathening, mgmy mactur	eu (IIIOISL)				<u>-</u> 18 -	_ F	TAR	XI				below	groun	otary at d surfac	e on
						- - 19 -	ĨĖ	AIRROT					5/21/0			
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Log of Boring **BH61B** Sheet 2 2 of Project No. East 1426046.481 Beazer/INDSPEC Properties 2568412 Location Elevation and Datum North Petrolia, Pennsylvania 1168.81 NAVD 1988 620003.698 Sample Data Remarks Depth Scale Penetr. resist BL/6in Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Reading (ppm) 20 Light gray SILTSTONE, trace sandstone; fine grained, moderate IRROTARY hardness, weak strength, deep weathering, highly fractured (wet) 21 22 23 Light to dark brown return Dark brown SANDSTONE w/ trace siltstone (10% or less), fine to medium grained, moderate hardness, weak strength, deep weathering, highly fractured (wet) water. 24 25 26 27 28 AIRROTARY 29 Increased brown to black Dark brown to black SANDSTONE, highly micaceous, medium water return. grained, moderate hardness, weak strength, deep weathering, highly fractured (dry) 30 Q:DATA42568401/DATA FROM PHILLY/OFFICE DATA/GINT LOGS\INDSPEC BORING LOGS.GPJ ... 11/2/2009 3:08:38 PM Set bottom of 4 inch well screen at 30.5 feet below End of Boring @ 31 ft ground surface. Terminated air rotary at 31 feet 32 below ground surface on 5/21/04. 33 34 35 36 37 38 39 43



ENGINEERING & ENVIRON	MENTAL SERVICES	Log	of E	Boring	ı		вн	62A			Sheet	1	of	2
Project			Pr	oject N	0.							East		
Beazer/INDSPEC Location	Properties		Eld	evation	and F)atum		8412				North	142	6075.025
Petrolia, Pennsylva	ania		⊏I€	evalion	anu L	Jaluii		74 3 NΔ	VD 198	88		NOILII	62	0546.516
Drilling Agency	a na		Da	ate Star	ted			4.0147			Finished		02	0040.010
Pennsylvania Drillii	ng Company						5	/18/04				5	5/18/04	
Drilling Equipment	D.		Cc	ompletio	on De	pth		00 (1		Rock	Depth		40.5	
Acker Hybrid Drill F Size and Type of Bit	≺ıg						Dist	20 ft urbed		Un	disturbed		18 ft Core	
6" OD Hollow Sten	n Auger		Nι	ımber c	of San	nples			8		N	/A		N/A
Casing Diameter (in) 4" Steel/2" PVC Ri	ser	Casing Depth (ft) 3.00'/5.00'	W	ater Le	vel (ft	.)	Firs		9.5	Co	mpletion 15	5.1	24 HR. T	16.2
Casing Hammer N/A	Weight (lbs) N/A	Drop (in)	Dr	illing Fo	orema	an	_				-		_	
Sampler 2" x 2.0' OD Split S			Inc	an antina	~ Fn~		arl D	ye						
Sampler Hammer Auto	Weight (lbs) 140 lbs	Drop (in) 30"	lins	specting	y Eng		Onni	s Webs	tor					
	140 105	30	_			L		mple Da				_		
MATERIAL SYMBOL	mple Description			Depti		Туре	۷٥٠.	ietr. iist 6in	PID		(Drillin		marks Depth of	Casing.
A A A	r r						1-	Penetr. resist BL/6in	Read (ppn		Fluid Los	ss, Drilli	ng Resista	Casing, ance, etc.)
Light gray subangular GRA	AVEL, trace dark brown	n gravelly sand (dry))	0	=	SS		3	0				sampling	and rilling was
				E 1	<u></u>	၂၇	75	5	0		perforr	ned.	Ū	Ū
					=		 ``	4	0 228	2			nstruction W-62A f	
Dark brown to black subar	ngular GRAVEL gravel	ly sand trace large	_	_ 2	1			5	248		detaile	d des	cription of	
aggregate (dry)	.ga.a. e. a tt ==, g.a. e.	., ca.ra, a acc large		Ė	=		.	5	91.4	4	\ installe			1404 1-2
				_ 3	4	SS	18	3	72.3	3	at 082	8.		_
				Ē,	7			2	0		at 085		102A-U7	1404_2-3
Dark gray gravelly SAND,	trace subangular grave	el & silt (dry)		- 4	=	SS		6	0					
				- - 5	4 %	SS	2	6	0		Top of	well c	oroon o	at at E fact
				-	=	0)	▋`	8	0				d surfac	et at 5 feet e.
Yellowish-brown silty CLA	V trace subangular gra	avel (dry)		6	+	1	-	9	0			•		
Silv Caronisir Srown sinty 62 t	i, trace suburigular gre	aver (dry)		E	=			4 4	0					
				- 7	4	SS	24	2	0					
				Ē,	=	SS		2	0		Stray	chemi	cal odor.	
Yellowish-brown silty SAN	D, increasing amounts	of dark black clay		8	Ŧ			3	0				Jul. 5 4 5 1 1	
(moist)				<u> </u>	r.			5	0					
			$\bar{\Delta}$	-	=	SS	₫ ``	5 8	0		Satura	ited at	9.5 feet	below
Yellowish-brown silty CLA	Y trace sand (wet)			10	1			8	0		ground			20.011
5	r, adoo band (wot)			_	=		∄.	8	0					
				_ 11	c	SS	24	7	0					
				12	1	SS		6	0					
Light gray silty CLAY, trace	e sand (wet)			12	=	SS		5	0					
				- 13	J.	SS	75	5	0					
				Ē	=			4	0					
				14	+	+		8	0		Termir	nated :	split spo	on
			_	Ė		SS	75	9	0		sampli	ing at	16 feet b	oelow re refusal
Light brown SANDSTONE			<u> </u>	15	=	SS	₫``	5	0					5/18/04.
grained, weak hardness & fractured (wet)	strength, deep weathe	ering, highly		- 16				50/1	0		_			
			$ar{ar{\Lambda}}$	ŧ "	=								d weathe t 18 feet	
<u> </u>				_ 17	4						ground	d surfa	ace.	
				Ė	=	띪							of well so round su	reen at 20 urface.
				18	4	AUGER	l					J		
				Ē ,_	=	[A]	ŀ							tem auger
				<u> </u>	=						aniling surfac	at 20 e on 5	feet bel 5/18/04.	ow ground



Log of Boring BH62A Sheet 2 of 2 Project Project No. East 1426075.025 Beazer/INDSPEC Properties 2568412 Location Elevation and Datum North Petrolia, Pennsylvania 1174.3 NAVD 1988 620546.516 Sample Data Remarks Depth Scale PID Reading (ppm) Recov. (in)
Penetr. resist
BL/6in Number Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) 20 End of Boring @ 20 ft 21 22 23 24 Q:DATA42568401/DATA FROM PHILLY/OFFICE DATA/GINT LOGS\INDSPEC BORING LOGS.GPJ ... 11/2/2009 3:08:42 PM ... Report. Log - LANGAN ...Template LANGAN.GDT 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 42 43



BH62B Sheet Log of Boring of 2 1 Project No. East Project 1426077.198 Beazer/INDSPEC Properties 2568412 Location Elevation and Datum North Petrolia, Pennsylvania 1174.3 NAVD 1988 620602.57 Drilling Agency Date Started Date Finished 5/20/04 Pennsylvania Drilling Company 6/7/04 **Drilling Equipment** Rock Depth Completion Depth 33 ft Acker Hybrid Drill Rig/CMI Air Rotary Rig 16.5 ft Size and Type of Bit Disturbed Undisturbed Core Number of Samples 10" OD Hollow Stem Auger/6" OD Roller Bit N/A N/A Casing Diameter (in) Casing Depth (ft) Completion 24 HR. First Water Level (ft.) 8"Steel/4"PVC Riser 16.00'/18.00' 3.5 0.5 Drop (in) N/A Weight (lbs) Drilling Foreman Casing Hammer N/A N/A Earl Dye Sampler N/A Inspecting Engineer Drop (in) N/A Weight (lbs) Sampler Hammer N/A N/A Dennis Webster Sample Data MATERIAL SYMBOL Remarks Depth Number Penetr. resist BL/6in (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Sample Description Type LANGAN.GD Scale (ppm) Hollow stem auger and air Light gray subangular GRAVEL, trace dark brown gravelly sand (dry) rotary drilling was performed. See well construction summary MW-62B for a detailed description of the 2 AUGER installed well. 3 5 Well kept collapsing due to Yellowish brown silty CLAY, trace large stone aggregate (moist) large amount of fill material (i.e. riprap). 6 JGER Black clayey SILT (moist) Light gray silty CLAY, large amounts of subangular gravel (wet) 8 Due to drill hole collapsing, a 12 inch OD auger was used to install 8 inch steel casing. Saturated at 9.75 feet below ground surface. 12 Light gray silty CLAY, increasing amounts of sand, trace sandstone ЭĐ fragments (wet) 13 14 Started air rotary drilling at 16 feet below ground surface on JGER 6/7/04. Auger refusal at 16 feet below 16 ground surface. Terminated Tan to brown SANDSTONE, micaceous, fine to medium grained, hollow stem auger drilling on weak hardness & strength, deep weathering, highly fractured (wet) 5/25/04. Set bottom of 8 inch 17 steel casing at 16 feet below AIRROTARY ground surface. Set top of 4 inch well screen at 18 18 feet below ground surface. 19 Light to dark SILTSTONE, fine grained, moderately hard, deeply weathered, highly fractured (dry)



Log of Boring **BH62B** Sheet 2 of 2 Project No. East Beazer/INDSPEC Properties 2568412 1426077.198 Location Elevation and Datum North Petrolia, Pennsylvania 1174.3 NAVD 1988 620602.57 Sample Data Remarks Depth Scale Recov. (in) Penetr. resist BL/6in Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Reading (ppm) 20 21 22 23 Dark gray to black water/cutting return strong chemical odor. 24 25 Increased water return - black 26 to brown in color strong chemical odor. 27 28 29 Dark to light gray SANDSTONE, micaceous, fine to medium grained, weak hardness & strength, deep weathering, highly fractured (wet) 30 31 RROTAR 32 Set bottom of 4 inch well screen at 33 feet below ground End of Boring @ 33 ft Q:\DATA4\2568401\DATA FROM PHILLY\OFFICE DATA\GINT LOGS\INDSPEC BORING LOGS.GPJ Terminated air rotary drilling at 34 33 feet below ground surface on 6/7/04. 35 36 37 38 39 43



BH63A Sheet Log of Boring of 2 1 Project No. East Project Beazer/INDSPEC Properties 2568412 1426177.228 Location Elevation and Datum North 620851.924 Petrolia, Pennsylvania 1175.21 NAVD 1988 Drilling Agency Date Started Date Finished 5/17/04 5/18/04 Pennsylvania Drilling Company **Drilling Equipment** Completion Depth Rock Depth Acker Hybrid Drill Rig 25 ft 25 ft Size and Type of Bit Disturbed Undisturbed Core Number of Samples 6" OD Hollow Stem Auger 8 N/A N/A Casing Diameter (in) Casing Depth (ft) Completion 24 HR. First Water Level (ft.) 2.50'/2.50' 4" Steel/2" PVC Riser 10 10.2 11.1 Drop (in) N/A Drilling Foreman Casing Hammer Weight (lbs) N/A N/A Earl Dye Sampler 2" x 2.0' OD Split Spoon Inspecting Engineer Drop (in) 30" Sampler Hammer Weight (lbs) 140 lbs Dennis Webster/Jason Hanna Sample Data Remarks MATERIAL SYMBOL Depth PID Number Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Type -ANGAN.GD Scale (ppm) Split spoon sampling and Dark brown to black sitly SAND, roots, trace subangular/subrounded 0 2 hollow stem auger drilling was gravel (dry) 214 3 performed. 9 122 See well construction summary MW-63A for a 34.3 detailed description of the 2 Light brown sandy SILT, subangular gravel, coal slag fragments 0 5 installed well. (moist) 0 Collected BH63A-071504 1-2 7 3 α at 0941. 0 0 3 0 6 0 5 က 8 5 Set top of 2 inch well screen at 5.3 2 5 feet below ground surface. 4.6 6 Dark brown clayey SILT, trace sand, asphalt subangular gravel 3.1 (moist) 0 24 0 0 8 Light to dark brown clayey SILT, some sand and subangular gravel 0 (moist) 0 24 9 S 0 0 2 10 0 Water encountered at 10 feet Light brown sandy CLAY, trace subangular gravel (wet) 5 below ground surface 0 5 24 ဖ 0 0 8 12 Black medium grained SAND, some subangular gravel, trace clay 0 8 (moist) 0 PHILLY/OFFICE DATA/GINT 9 8 13 0 0 10 0 Collected Dark gray silty CLAY, trace fine sand, subangular gravel (very moist) SS 15 50/1 ω BH63A-071504_13-14 at 1010 15 Encountered split spoon refusal at 15 feet below ground surface on 5/17/04. 16 Dark brown saturated silty CLAY, trace gravel (wet) 17 18 19



Log of Boring BH63A Sheet 2 of 2 Project Project No. East Beazer/INDSPEC Properties 2568412 1426177.228 North Location Elevation and Datum Petrolia, Pennsylvania 1175.21 NAVD 1988 620851.924 Sample Data Remarks Depth Scale PID Reading (ppm) Recov. (in)
Penetr. resist
BL/6in Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) 20 Set bottom of 2 inch well screen at 20 feet below ground surface. 21 22 23 24 Light to dark brown fractured SANDSTONE, trace dark gray silty Q:DATA42568401/DATA FROM PHILLY/OFFICE DATA/GINT LOGS\INDSPEC BORING LOGS.GPJ ... 11/2/2009 3:08:50 PM ... Report Log - LANGAN ...Template LANGAN, GDT clay (dry) Terminated hollow stem auger End of Boring @ 25 ft drilling at 25 feet below ground surface on 5/18/04. 26 27 28 29 30 31 32 33 34 35 36 37 38 39 43



BH63B Sheet Log of Boring of 3 1 Project No. East Project Beazer/INDSPEC Properties 2568412 1426179.302 Location Elevation and Datum North 620859.619 Petrolia, Pennsylvania 1175.05 NAVD 1988 Drilling Agency Date Started Date Finished 5/18/04 Pennsylvania Drilling Company 5/19/04 **Drilling Equipment** Completion Depth Rock Depth 46 ft Acker Hybrid Drill Rig/CMI Air Rotary Rig 30.5 ft Size and Type of Bit Disturbed Undisturbed Core Number of Samples 10" OD Hollow Stem Auger/6" OD Roller Bit N/A N/A Casing Diameter (in) Casing Depth (ft) Completion 24 HR. First Water Level (ft.) 8" Steel/4" PVC Riser 30.50'/31.00' 11.2 11.6 Drilling Foreman Casing Hammer Weight (lbs) Drop (in) N/A N/A N/A Earl Dye Sampler N/A Inspecting Engineer Drop (in) N/A Weight (lbs) Sampler Hammer N/A N/A Dennis Webster Sample Data MATERIAL SYMBOL Remarks Depth Number Penetr. resist BL/6in Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Type ANGAN.GD Reading (ppm) Scale Hollow stem auger and air Light gray GRAVEL, trace sitly sand, some roots (moist) rotary drilling was performed. See well construction summary MW-63B for a detailed description of the 2 AUGER installed well. 3 Light brown silty CLAY, some gravel and coal fragments (dry) 5 6 Dark gray silty CLAY, some fine sands, less gravel, color changing to brown (dry) AUGER Slight chemical odor. 8 9 Dark gray to brown silty CLAY, increasing sand content (moist) 10 Light brown sandy CLAY, some gravel (wet) Saturated at 11 feet below ground surface. 12 ЭĐ 13 Dark gray to black gravelly CLAY, fine to coarse sand (wet) Dark gray to black silty CLAY, some fine sand, trace subangular gravel (wet) 15 16 Dark gray to brown silty CLAY, trace brown fine-to-coarse sand (wet) 18 19



BH63B Sheet Log of Boring 2 of 3 Project No. East Project Beazer/INDSPEC Properties 2568412 1426179.302 Location Elevation and Datum North 1175.05 NAVD 1988 620859.619 Petrolia, Pennsylvania Sample Data MATERIAL SYMBOL Remarks Depth Number Penetr. resist BL/6in Sample Description Recov. (in) (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Scale Reading (ppm) 20 Strong chemical odor. 21 collected PID measurements. Dark gray to black clayey SAND, trace angular rock fragments (wet) 22 23 24 25 Light to dark gray silty CLAY, some sand, trace siltstone/sandstone rock fragments (moist) 26 **Encountered** weathered bedrock. 27 28 Light to dark gray gravelly CLAY, trace siltstone and sandstone rock fragments (moist) 29 Auger refusal encountered at 30.5 feet below ground 30 surface on 5/18/04. Set Tan to brown SANDSTONE, trace clay, iron staining, fine to medium bottom of 8 inch steel casing 31 grained, micaceous, moderately hard and strong, deep weathering, at 30.5 feet below ground highly fractured (dry) surface. Air rotary began at 30.5 feet 32 below ground surface. IRROTAR Set top of 4 inch well screen at 21 feet below ground surface. 33 Gray to black water return, slight chemical odor. 34 Brown SANDSTONE, micaceous, fine grained, moderately hard and strong, deep weathering, highly fractured (dry) Rock fragments were angular to subangular. 35 36 37 38 Gray to clear return water. 39 Brown and gray SANDSTONE, micaceous, fine grained, moderately hard and strong, deep weathering, highly fractured (dry) 42 **RROTAR** 43 Light gray to clear return water.



Log of Boring **BH63B** Sheet 3 of 3 Project Project No. East 2568412 1426179.302 Beazer/INDSPEC Properties Elevation and Datum Location North Petrolia, Pennsylvania 1175.05 NAVD 1988 620859.619 Sample Data Remarks Depth Scale Recov. (in)
Penetr. resist
BL/6in Number Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Reading (ppm) 45 က Set bottom of 4 inch well AIRROTARY screen at 45.5 feet below End of Boring @ 46 ft ground surface. Terminated air rotary drilling at 47.5 feet below ground surface on 5/19/04. 48 49 Q:DATA42568401/DATA FROM PHILLY/OFFICE DATA/GINT LOGS\INDSPEC BORING LOGS.GPJ ... 11/2/2009 3:08:55 PM ... Report. Log - LANGAN ...Template LANGAN.GDT 50 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69



BH64A Sheet Log of Boring of 2 1 Project No. East Project Beazer/INDSPEC Properties 2568412 1426186.822 Location Elevation and Datum North Petrolia, Pennsylvania 1162.16 NAVD 1988 621463.263 Drilling Agency Date Started Date Finished 7/12/04 Pennsylvania Drilling Company 7/13/04 **Drilling Equipment** Completion Depth Rock Depth Acker Hybrid Drill Rig 23.3 ft 22.9 ft Size and Type of Bit Disturbed Undisturbed Core Number of Samples 6" OD Hollow Stem Auger 8 N/A N/A Casing Diameter (in) Casing Depth (ft) Completion 24 HR. First Water Level (ft.) 2.15'/9.80' 4" Steel/2" PVC Riser 3.5 7.5 $\sqrt{}$ 8.8 Drop (in) N/A Casing Hammer Weight (lbs) Drilling Foreman N/A N/A Earl Dye/Jim Lang Sampler 2" x 2.0' OD Split Spoon Inspecting Engineer Drop (in) 30" Sampler Hammer Weight (lbs) 140 lbs Dennis Webster Sample Data MATERIAL SYMBOL Remarks Depth Number Penetr. resist BL/6in Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Type LANGAN.GD Scale Reading (ppm) 71/2. 11/ Split spoon sampling and Dark brown to black topsoil, grass, and roots (moist) 0 3 hollow stem auger drilling was 0 performed. 7 0 Dark brown silty CLAY, w/mixed subangular gravel, trace sandstone 5 See well construction summary MW-64A for a fragements (moist-wet) 0 5 detailed description of the 2 0 6 installed well. 0 Collected BH64A-071204 0-2 3 7 3 α at 1615. 0 14 Saturated at 3.5 feet below 0 8 ground surface. 0 NA Poor split spoon recovery. 0 NA 2 5 က 3 NA 5 5 6 Dark brown to black gravelly CLAY (wet) 10 3 17 3 7 0 Dark black silty CLAY, trace subangular gravel (wet) 33 0 5 8 170 191 PHILLY/OFFICE DATA/GINT LOGS/INDSPEC BORING LOGS 20 S Black to brown fine grained SAND, trace brown clay and gravel (wet) 107 94 9 Set top of 2 inch well screen at 10 3 9.8 feet below ground surface. Collected 7 8 9 BH64A-071204 8-10 at 1645. 5 Slight sheen observed. 5 12 10 9 12 Black to brown fine/medium grained silty SAND, tan to brown 12 13 24 sandstone fragments, trace clay (wet) 22 9 27 6 14 0 9 0 9 24 ω 0 Terminated split spoon Dark gray silty CLAY, trace subangular gravel and sandstone 8 sampling at 16 feet below fragements (moist) 0 8 ground surface on 7/12/04. 16 Began hollow stem auger drilling at 16 feet below ground 17 surface. Smooth augering. 18 19



Log of Boring BH64A Sheet 2 of 2 **ENGINEERING & ENVIRONMENTAL SERVICES** Project Project No. East Beazer/INDSPEC Properties 2568412 1426186.822 Location Elevation and Datum North Petrolia, Pennsylvania 1162.16 NAVD 1988 621463.263 Sample Data Remarks Depth Scale Number Recov. (in) Penetr. resist BL/6in Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Reading (ppm) 20 21 AUGER 22 Slower augering due to Light gray SILT, trace fine sand and subangular gravel, some 2 weathered bedrock. sandstone fragments (moist) 23 Reddish brown SANDSTONE, iron staining, medium grained moderately hard strong of the many moderately hard strong of the many moderately hard strong of the moderately hard strong of 24 Q:DATA42568401/DATA FROM PHILLY/OFFICE DATA/GINT LOGS\INDSPEC BORING LOGS. GPJ ... 11/2/2009 3:08:59 PM ... Report. Log - LANGAN ...Template LANGAN. GDT Set bottom of 2 inch well 25 screen at 24.8 feet below ground surface. Auger refusal encountered at 26 24.8 feet below ground surface on 7/13/04. 27 28 29 30 31 32 33 34 35 36 37 38 39 41 42 43



	ENGINEERING & ENVIRO	VMENTAL SERVICES		Log	of E	3oring			ВН	64B			Sheet	1	of	2
Project					Pr	oject No								East		
1 6	Beazer/INDSPEC	Properties			ļ_,			- 1		8412				NI		6186.822
Location					Ele	evation a	and D	atun		20.00.1	IA) (D. 40			North		4 400 000
Drilling Age	Petrolia, Pennsylv	rania			Da	ate Start	ed		116	02.22 N	IAVD 19		inished	1	62	1463.263
, , , , , ,	Pennsylvania Drill	ing Company					-		7	7/16/04					7/28/04	
Drilling Equi		ing company			Co	ompletio	n Dep	oth		7 10/01	F	lock I	Depth		.,20,01	
	Acker Hybrid Drill	Rig/CMI Air Rotary F	Rig							40 ft					24 ft	
Size and Ty		m Augor/2 1/4" NV C	'oro		Νι	umber of	Sam	ples	Dist	turbed		Un	disturbed	V/A	Core	N/A
Casing Diar		m Auger/3 1/4" NX C	Casing Depth	(ft)	1				Firs	t		Coi	mpletion I	V/A	24 HR.	IN/A
	8" Steel/2" PVC R		24.50'/30.	00'	1	ater Lev			$ \overline{\Delta}$, 	4	Ţ	<u> </u>	0.7	$ar{ar{ar{\Lambda}}}$	7.4
Casing Ham	nmer N/A	Weight (lbs)	/A Drop (in)	N/A]Dr	illing Fo	rema									
Sampler	NX Core Barrel				Ins	specting	Engi		Earl D	ye						
Sampler Ha	mmer N/A	Weight (lbs)	/A Drop (in)	N/A	1	3	5			s Webs	ster/Cris	Sch	warz			
٦	, .				/ لا					mple Da]			
MATERIAL	Sam	nple Description			Coring min/ft	Depth Scale	Number	Type) S (=	Penetr. resist BL/6in	PID Readir		(Drill		marks , Depth of	Casing,
:					Corin		Nun	1	. Rec	Per BE	(ppm)				Casing, ance, etc.)
	Dark brown to black topso		ngular gravel an			F 0 -	=								auger a	
·	roots, large aggregate/rip	-rap (moist)		Y		_ 1	1						perfo	rmed.	Ū	
<u>\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\</u>						 	‡		1				See	vell co	nstruction	n ior o
	Dark brown silty CLAY, w sandstone fragements (m		ravel, trace			- 2	3	2	1				detail	ed des	W-64B facription	of the
	sandstone magements (ii	loiot wet)				Ē _	_	AUGER	1					led we		
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						E	3		1							
				∇		4		١,	l							
						-	‡	١.	ŀ					ated a	t 4.25 fee	et below
	Dark gray and brown silty	CLAY, trace fine/me	edium grained			5	╁	+ '	-				groui	iu Suri	acc.	
	sands, mixed amounts of	subangular gravel (w	vet)			Ē	=		1							
						6	7									
						Ē	3		1							
				Ā		- 7	7	ER	l							
				-		E	7	AUGER	l							
						<u> </u>	Ξ.	⋖ '	l							
						F _	‡	'	1							
	Dark black, brown, and gr	ray silty SAND, trace	clay and			9	3		1							
	subangular gravel (wet)					10	1									
						10	‡		i i							
						E 11 ·	3	١.	ŀ							
						E	1		ŀ							
[Dark gray to black clayey	SAND trace engular	r rook fragments			- 12	=	2	1							
	(wet)	SAND, trace arigular	TOCK Tragments			Ē	m	AUGER	1							
						13	4	A.								
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BH64B Sheet Log of Boring 2 of 2 Project No. East Beazer/INDSPEC Properties 2568412 1426186.822 Location Elevation and Datum North 1162.22 NAVD 1988 Petrolia, Pennsylvania 621463.263 Sample Data Coring min/ Remarks Depth Number Penetr. resist BL/6in Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Scale Reading (ppm) 20 21 22 2 23 Set bottom of 8 inch steel 24 Light gray CLAYSTONE, iron staining, soft to friable, fine 100% casing at 24 feet below ground 83% grained, weak, deep weathering, highly fractured (wet) 1:22 surface 25 Stopped hollow stem auger drilling at 24 feet below ground 00:22 surface on 7/16/04. 26 REC=60"/60" =100% Started 4 inch diameter NX =82% rock core drilling at 24 feet 00:24 below ground surface. 27 RQD=49"/60" Slow rotation speed, dark 00:38 brown water return. Increased rotation speed, light 28 Light gray SANDSTONE, iron staining, micaceous, medium to gray water return. 00:49 course grained, moderately hard, deep weathering, highly fractured (dry) 29 00:55 30 Set top of 2 inch well screen at LOGS\INDSPEC BORING LOGS.GPJ ... 11/2/2009 3:09:03 PM 01:28 30 feet below ground surface. Smooth coring, increased 31 REC=60"/60" =100% RQD=48"/60" =80% Dark gray SILTSTONE, minor inclusions, fine grained, rotation speed. moderately hard, deeply weathered, highly fractured, 00:44 interbedded sandstone from 33'-34' (dry) 32 00:34 33 00:25 34 Dark gray water return with a 00:32 visible sheen. 35 Dark gray SHALE, friable, fine grained, weak, deep 00:34 weathering, highly fractured, coal fragements from 35'-36' (wet) REC=60"/60" =100% 36 RQD=51"/60" =85% 00:51 37 01:01 Q:\DATA4\2568401\DATA FROM PHILLY\OFFICE DATA\GINT 38 00:48 Light gray SANDSTONE, very fine grained, moderately hard, 39 weak, moderately weathered (moist) 00:31 Set bottom of 2 inch well screen at 40 feet below ground End of Boring @ 40 ft 00:32 surface. Terminated 4 inch diameter NX rock core drilling at 40 feet below ground surface on 7/27/04. 43



BH65A Log of Boring Sheet of 1 1 Project No. East Project Beazer/INDSPEC Properties 2568412 142168.909 Location Elevation and Datum North Petrolia, Pennsylvania 1162.62 NAVD 1988 621631.197 Drilling Agency Date Started Date Finished 7/13/04 Pennsylvania Drilling Company 7/13/04 **Drilling Equipment** Completion Depth Rock Depth Acker Hybrid Drill Rig 16.7 ft 15.6 ft Size and Type of Bit Disturbed Undisturbed Core Number of Samples 6" OD Hollow Stem Auger 8 N/A N/A Casing Diameter (in) Casing Depth (ft) Completion 24 HR. First Water Level (ft.) 4" Steel/2" PVC Riser 1.75'/6.30' 6.8 7.8 Drop (in) N/A Drilling Foreman Casing Hammer Weight (lbs) N/A N/A Jim Lang Sampler 2" x 2.0' OD Split Spoon Inspecting Engineer Drop (in) 30" Sampler Hammer Weight (lbs) 140 lbs Dennis Webster Sample Data MATERIAL SYMBOL Remarks Depth PID Number Penetr. resist BL/6in (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Sample Description LANGAN.GD Scale (ppm) Split spoon sampling and 11/2 11/2 Dark brown to black topsoil, grass, and roots, some subangular 0 2 hollow stem auger drilling was gravel (moist) 0 5 performed. 8 0 Light brown silty CLAY, large aggregate/rip-rap, some weathered 8 See well construction summary MW-65A for a sandstone (moist) 2 14 detailed description of the 2 3.1 5 installed well. 0 Collected BH65A-071304 0-2 8 24 3 α at 1445. 7.1 8 0 Light to dark brown gravelly CLAY, some fine to coarse sands (wet) 8.2 6.2 8 Saturated at 4.7 feet below 7 5 က 5.2 ground surface. 0 6 3 6 Set top of 2 inch well screen at Black fine to coarse grained SAND, mixed amounts of 0 6.3 feet below ground surface. 7 24 subangular/subrounded gravel (wet) 11 $\sqrt{}$ 12.1 7 Sheen observed. 8 17 2 OGS.GPJ 33.1 7 9 S 2 176 Some wood fragements (wet) 3 199 2 17 Dark gray silty CLAY, trace sandstone fragements (moist) 33.1 6 SS≣ 8 ဖ 176 5 199 5 12 7 35 Collected BH65A-071304_11-12 at 170 10 1545. 24 13 225 16 116 30 51 8 Brown to gray SANDSTONE, iron staining, fine to medium grained, 16 Sheen observed. 8 ω 25 moderately hard and strong, deep weathering, highly fractured (wet) 30.1 27 50/1 Split soon refusal encountered 7.7 16 at 16 feet below ground BΘ Q:\DATA4\2568401\DATA FROM surface on 7/13/04. Set bottom of 2 inch well End of Boring @ 16.7 ft 17 screen at 16.3 feet below ground surface. Terminated hollow stem auger 18 drilling at 16.7 feet below ground surface due to auger refusal on 7/13/04. 19

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	ENGINEERING & ENVIRO	NMENTAL SERVICES	;	Log	of E	Borir	ng _			вн	65B			Sheet	1	of	2
Project					Pr	oject	No.								East		
Location	Beazer/INDSPEC	Properties				ovatio	on and	1 Da	tum		8412				North	1426	6166.238
Location	Petrolia, Pennsylv	vania				evalio	JII alic	ם נ	aturri		62.43 N	Δ\/D 1	988		NOILII	62	1657.974
Drilling Agency		railia			Da	ate St	tarted			110)Z.43 IN			Finished		02	1037.374
	Pennsylvania Drill	ling Company								7	/16/04				7	7/27/04	
Drilling Equipm					Co	omple	etion E	Dept	th				Rock	Depth			
Size and Type		Rig/CMI Air Rotan	y Rig		-					Dist	34 ft urbed		Ur	ndisturbed		15.5 ft Core	
1	6" OD Hollow Ste	m Auger/3 1/4" NX			Νι	umbei	r of Sa	amp	oles					N	Ά		N/A
Casing Diamet	er (in) 8" Steel/2" PVC R	?iser	Ca	sing Depth (ft) 16.00'/18.00'	w	ater L	Level	(ft.)		Firs		6.6		ompletion 7	.7	24 HR.	8
Casing Hamme		Weight (lbs)	N/A	Drop (in) N/A	Dr	rilling	Forer	man	ľ	1 -	-	0.0		<u>* </u>	.,	<u> </u>	
Sampler			IN/A	IN/A	┖					arl D	ye						
Sampler Hamn	NX Core Barrel	Weight (lbs)		Drop (in) N/A		specti	ing Er	ngin									
<u> </u>	N/A		N/A	N/A	 #				ט		s Webs		s Sch	nwarz			
MATERIAL	Sam	nple Description			Coring min/ ft	De	pth	per	e	_		PII		(Drillin		marks Depth of 0	Cooing
MAT SYN	Jan	ipic Description			Soring		ale	Number	Type	Reco in	Penetr. resist BL/6in	Read (ppi		Fluid Los	s, Drilli	ng Resista	ince, etc.)
[<u>x / //</u> Da	ark brown to black tops	oil, grass, and som	ne roots ((moist)		F c	o 寸			ı						auger a	
17.7.1.7						Ė,	. 🖠			ŀ				perform		lling was	5
Da Da	ark brown silty CLAY, w	//mixed subangular	r/subrour	nded gravel,		Ė '	' ₫									nstruction W-65B f	
	ce fine sand, some sar					F 2	2 -		2					detaile	d des	cription o	
						F	3	_	JGER					installe	d wel	l.	
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						E	E 6			ľ				Satura	ted at	6 feet be	elow
				$\overline{\Delta}$		E				l				ground			CIOW
						- 7	7 🚽		낊	l							
				4		Ė.		7	AUGER								
	ack fine to medium gra	nined silty SAND, s	ome clay	y and mixed		- 8	8 =		∢ !								
gra	avel (wet)					<u> </u>	Ė		1								
						E	Ē		1								
	ack coarse grained silty					F 1	٦ و										
DIA DIA	ack coarse grained silty	SAND, Some Sub	angular	gravei (wet)		Ē	=										
(1) (A) (A)						- 1	1 =										
						Ė	=			1							
3 2 3	oven to blook modium to		III A O A NII			<u> </u>			GER	l							
Su	own to black medium to bangular gravel, trace o	clay lenses (wet)	IIIY SANI	J, Some		<u> </u>	7	က	NG NG	ľ							
						F '	3 =		1	ŀ							
						F 1	4			l				Augor	rofuo	al anaarii	atorod ot
						Ē .	Ė							15.5 fe	et bel	ow grou	ntered at nd
						- 1	5 🕂							surface	e. Se	t bottom	of 8 inch
Gr	ay SANDSTONE, med	lium to coarse grain	ned. mod	derately		ŧ	=							ground	Surfa	ace on 7/	eet below /16/04.
ha	rd, deep weathering, h	ighly fractured with	iron sta	ining (wet	0:53	F 1	6 🕂									h diame	ter NX 5.5 feet
to	dry)					ŧ.,	_ =							below	groun	d surface	e.
					0:43	F 1	/ =		_					Steady dark or	rotati	on spee	d, black to n. Strong
					0:37] - -	E 8	2	Ü					\ chemic	al od	or.	_
						‡ຶ	Ĭ	4	AGEE					Set top	of 2 beloy	ınch well v graund	screen at surface.
					0:58	E 1	9 =		¥					13 1001		. ground	
						Æ	3		1								



Log of Boring **BH65B** Sheet of 2 2 Project No. East Beazer/INDSPEC Properties 2568412 1426166.238 Location Elevation and Datum North Petrolia, Pennsylvania 1162.43 NAVD 1988 621657.974 Sample Data Coring min/ f Remarks Depth Scale Penetr. resist BL/6in Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Reading (ppm) 20 0:33 21 Slight binding of drill rods, slowed rotation speed, good Dark black COAL, soft, weak, highly fractured (dry) water return. 0:30 22 REC=60"/60" =100% RQD=39"/60" =65% Increased rotation speed. 0:56 23 1:05 24 0:51 25 Light to dark gray CLAYSTONE, soft to friable, fine grained, weak, moderate weathering, slightly fractured (wet) 1:48 26 Black water return, strong chemical odor. 1:19 27 REC=42"/60" =70% RQD=38"/60" =63% Set bottom of 2 inch well 28 0:56 screen at 28 feet below ground Dark gray water return, steady 0:57 29 rotation speed. 0:54 30 1:08 REC=100% RQD=67% 0:55 32 0:53 33 Q:\DATA4\2568401\DATA FROM PHILLY\OFFICE DATA\GINT LOGS\INDSPEC BORING LOGS.GPJ Terminated NX rock core End of Boring @ 34 ft drilling at 34 feet below ground surface on 7/27/04. 0:21 35 36 37 38 39 43



	ENGINEERING & ENVIROR	NMENTAL SERVICES	Log	of B	oring			ВН	66A			Sheet	1	of	1
Project				Pro	ject No.								East		
Location	Beazer/INDSPEC	Properties		Ele	vation a	nd D	atum		8412				North	142	6165.344
	Petrolia, Pennsylv	<i>r</i> ania						116	32.19 N	IAVD 1	988			6	21796.84
Drilling A	•			Dat	te Starte	ed					Date	Finished			
Drilling Ed	Pennsylvania Drill	ling Company		Col	mpletion	n Den	nth	7	/14/04		Rock	Depth	7	/15/04	
Drilling Ex	Acker Hybrid Drill	Ria			inpictioi	ГВСР	, , ,		18 ft		rtook	Берит			
Size and	Type of Bit			Nu	mber of	Sam	nles	Dist	urbed		Un	disturbed		Core	
Casing D	6" OD Hollow Stelliameter (in)	m Auger	Casing Depth (ft)	+				Firs	t	8	Co	M mpletion	/A	24 HR.	N/A
	4" Steel/2" PVC R		1.95'/8.00'		ter Leve	. ,		∇		5.1		- '	5.8	$ar{ar{\Lambda}}$	6.3
Casing H	ammer N/A	Weight (lbs) N/A	Drop (in) N/A	Drii	lling For	emai		m c							
Sampler	2" x 2.0' OD Split			Ins	pecting	Engir		m La	ang						
Sampler I	Hammer N/A	Weight (lbs) 140 lbs	Drop (in) 30"				D		s Webs						
ilAL OL					Depth		1		mple Da				Rei	marks	
MATERIAL	Sa	ample Description			Scale		Type	Recov.	Penetr. resist BL/6in	PII Read	ding	(Drillin	a Fluid.	Depth of	Casing, ance, etc.)
5 31 1/2. 1/2 1/2.	Black topsoil, grass, some	e subangular gravel and	t roots large		_ 0 -	Ž			2	(pp				ampling	
1/ 1/1/	aggregate/rip-rap (moist)	o oabangalal glavel alle	2 10013, 1019 0	ŀ	-	=	SS		5	0		hollow	stem		rilling was
	Dark brown fine to mediu	m grained silty SAND,	some		- 1 -	<u> </u>	SS	12	9	0)	perform See w		structio	n
0.4	subangular/subrounded g	gravel (dry)			- 2	=			7	6.	1			W-66A f	
				F	- 2 - -	=			4	9.		installe	ed well		or trie
	Light brown silty CLAY, s	omo aubangular/aubrau	unded gravel trace		- - 3 -	~ F	SS	12	5	7.5 2.5		Collect BH66		104 0.5	-1.5 at
	fine sand (moist)	ome subangular/subiou	inded graver, trace	-		3			6 7	0		0850.			
				-	- - 4 -	╁			4	0)				
					_	Ξ.	SS	e e	4	0)				
				<u> </u>	- 5 - -		S	18	4	0				5.1 feet	
				¥	- 6 -	1			2	11.	.1	ground		ice, stor or.	ng
				<u></u>	- -	₫ 4	SS	24	_						
					- - 7 -	1	Į"E		1						
	Light brown to black CLA trace fine sand (wet)	Y, some subangular/sul	brounded gravel,	Ī	- - -	=			˙ ₁						
	trace into saria (wet)			İ	- 8 - -	=			3	9.:	2				
					- - 9 -	2	တ္တ	18	5	9					
	Dark brown fine to coarse	e SAND, trace clay (wet)	Į	- -	= "	SS	-	5	44 55		Collec	ted		
				ŀ	- - 10 -	<u> </u>			3	17.		BH66/		404_8.5	-9.5 at
				ŀ	-	=			8	8.		0915.			
				ŀ	- 11 -	9	SS	18	8	14	.6				
					- - 12 -	1	SS		15	13					
	Tan SANDSTONE, fine to highly fractured (wet)	o coarse grained, friable	e, deep weathering,	ŀ	- 12	=	SS		9	0				ed rock	
	riigriiy iradiarea (wei)			-	- 13 -	_	SS	8	12	1.1		encou	nterea	•	
				F		3			13 10	12					
	Gray silty SAND, some w	eathered sandstone fra	gements (wet)	\dashv	_ _ 14 -	1	╁		12	10					
			. ,		- - - 4 <u>-</u>		SS	8	6	3.	8				
				Ī	- 15 - -	=			7 50/1	6.					
				Ė	- 16 -	1			30/1	0)	Split o	oon ro	fucal or	countered
	Tan to raddish brown SAI	NDSTONE modium to	coareo grained ven	,	-	=	22							low gro	
	Tan to reddish brown SAI soft, deep weathering, high				- - 17 -	4	AUGEF					surfac		-	
				Ė	- - -	=	¥								
1	End of	Boring @ 18 ft			- 18	=									tem auger
9		3 0 13 11		ļ	- - 19 -	=						surfac	e due		ow ground r refusal
3					- 10	=						7/15/0		-	



BH66B Sheet Log of Boring of 2 1 Project No. East Project 1426167.893 Beazer/INDSPEC Properties 2568412 North Location Elevation and Datum Petrolia, Pennsylvania 1162.68 NAVD 1988 621807.107 Drilling Agency Date Started Date Finished 7/16/04 Pennsylvania Drilling Company 7/19/04 **Drilling Equipment** Completion Depth Rock Depth 35 ft Acker Hybrid Drill Rig/CMI Air Rotary Rig 16.5 ft Size and Type of Bit Disturbed Undisturbed Core Number of Samples 10" OD Hollow Stem Auger/6" OD Roller Bit N/A N/A Casing Diameter (in) Casing Depth (ft) Completion 24 HR. First Water Level (ft.) 8" Steel/4" PVC Riser 17.00'/20.00' 5.5 5.7 6 Drop (in) N/A Weight (lbs) Drilling Foreman Casing Hammer N/A N/A Earl Dye Sampler N/A Inspecting Engineer Drop (in) N/A Weight (lbs) Sampler Hammer N/A N/A Dennis Webster Sample Data MATERIAL SYMBOL Remarks Depth Number Penetr. resist BL/6in Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Type emplate LANGAN.GD Reading (ppm) Scale Hollow stem auger and air 11/2 11/2 Black topsoil, grass, some subangular gravel and roots, large rotary drilling was performed. aggregate/rip-rap (moist) See well construction summary MW-66B for a Dark black silty CLAY, w/mixed subangular/subrounded gravel, trace detailed description of the fine sand, some sandstone fragments (moist-wet) 2 AUGER installed well. 3 Dark brown to gray medium to coarse grained silty SAND, some clay ∇ 11/2/2009 3:09:19 PM (wet) Saturated at 5.1 feet below 6 ground surface. AUGER 8 01/DATA FROM PHILLY/OFFICE DATA/GINT LOGS/INDSPEC BORING LOGS.GPJ 9 Brown medium grained silty SAND, subangular/subrounded gravel, some clay, trace sandstone fragments (wet) Strong chemical odor. 12 ЭĐ 13 16 Weathered bed rock Brown to gray SANDSTONE, micaceous, fine grained, moderately hard and strong, deep weathering, highly fractured, (dry) 17 encountered. 18 Auger refusal encountered at RROTAR 18 feet below ground surface. Set bottom of 8 inch steel 19 casing at 18 feet below ground surface.



Log of Boring BH66B Sheet of 2 2 Project No. East Beazer/INDSPEC Properties 2568412 1426167.893 Location Elevation and Datum North Petrolia, Pennsylvania 1162.68 NAVD 1988 621807.107 Sample Data Remarks Depth Scale Penetr. resist BL/6in Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Reading (ppm) 20 Air rotary began at 18 feet Gray CLAYSTONE, soft to friable, fine grained, weak, moderate below ground surface. AIRROTARY weathering, highly fractured (wet) Set top of 4 inch well screen at 21 20 feet below ground surface. Smooth drilling, good cutting and water return. 22 Black return water and 23 Light to dark gray SANDSTONE, medium to coarse grained, cuttings with strong chemical moderately hard, deep weathering, highly fractured with iron staining odor. (wet to dry) 24 25 26 27 28 29 30 31 32 Dark gray to black water and cutting return with strong chemical odor. 33 IRROTAR Q:\DATA4\2568401\DATA FROM PHILLY\OFFICE DATA\GINT LOGS\INDSPEC BORING LOGS.GP 34 Set bottom of 4 inch well screen at 35 feet below ground End of Boring @ 35 ft Terminated air rotary drilling at 35 feet below ground surface 36 on 7/19/04. 37 38 39 43



BH67B Sheet Log of Boring of 3 1 Project No. East Project 1426810.239 Beazer/INDSPEC Properties 2568412 Location Elevation and Datum North Petrolia, Pennsylvania 1276.18 NAVD 1988 621617.52 Drilling Agency Date Started Date Finished 7/20/04 Pennsylvania Drilling Company 7/23/04 **Drilling Equipment** Completion Depth Rock Depth Acker Hybrid Drill Rig/CMI Air Rotary Rig 50.1 ft 8.5 ft Size and Type of Bit Disturbed Undisturbed Number of Samples 10" OD Hollow Stem Auger/6" OD Roller Bit N/A N/A Casing Diameter (in) Casing Depth (ft) Completion 24 HR. First Water Level (ft.) 8" Steel/4" PVC Riser 9.20'/35.10' 33.3 35.4 Drop (in) N/A Drilling Foreman Casing Hammer Weight (lbs) N/A N/A Earl Dye Sampler 2" x 2.0' OD Split Spoon Inspecting Engineer Drop (in) 30" Sampler Hammer Weight (lbs) 140 lbs Dennis Webster/Cris Schwarz Sample Data MATERIAL SYMBOL Remarks Depth PID Number Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) ANGAN.GD Scale Reading (ppm) 11/2 11/2 Split spoon sampling and Dark brown to black topsoil, some roots (moist) 0 0 hollow stem auger drilling was Dark black clayey SAND, mixed gravel, some roots (dry) 0 0 performed. 24 0 See well construction summary MW-67B for a 0 9 detailed description of the 2 0 5 installed well. 0 Collected 24 3 2 BH67B-072004_0.5-1.5. 0 0 Light brown medium grained SAND, trace sandstone fragements 8 (dry) 0 11 0 15 8 5 3 0 16 Collected Light brown silty CLAY, trace fine to medium grained sand, some 15 BH67B-072004_4.5-5.5. 6 sandstone fragments (dry) 0 10 0 10 ∞ 0 12 Light brown to gray medium grained SAND (dry) 0 30 8 0 50/1 Split soon refusal encountered Light gray SANDSTONE, medium to coarse grained, low hardness, weak, deep weathering, highly fractured with iron staining (dry) 9 5 at 8.5 feet below ground surface on 7/20/04. 12 ROTAR 13 AR 15 Dry cutting return. 16 18 A one inch pvc piezometer was temporarily installed for 24 hours 7/21/04. No water return 19 after 24 hours.



Log of Boring BH67B Sheet 2 of 3 Project No. East Beazer/INDSPEC Properties 2568412 1426810.239 Location Elevation and Datum North Petrolia, Pennsylvania 1276.18 NAVD 1988 621617.52 Sample Data Remarks Depth Scale Penetr. resist BL/6in Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Reading (ppm) 20 No water return. 21 22 Tan to light brown SANDSTONE, micaceous, fine to medium grained, low hardness, weak, deep weathering, (dry) 23 AIR ROTAR\ 24 25 26 No water return. 27 28 29 30 32 Gray SHALE, soft to friable, fine grained, weak, moderate weathering (wet) AIR ROTARY 33 34 Dark gray SANDSTONE, medium to coarse grained, low hardness, weak, deep weathering (dry) 35 Set top of 4 inch well screen at 35.1 feet below ground surface. 36 Water return after 45 minutes on 7/21/04. 37 38 39 Light gray to light brown SANDSTONE, medium to coarse grained, low hardness, weak (dry) 43 Good water return.



Log of Boring **BH67B** Sheet 3 of 3 Project Project No. East Beazer/INDSPEC Properties 1426810.239 2568412 North Location Elevation and Datum Petrolia, Pennsylvania 1276.18 NAVD 1988 621617.52 Sample Data Remarks Depth Scale PID Reading (ppm) Recov. (in)
Penetr. resist
BL/6in Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) 45 ROTARY 46 AIR 48 ROTAR 49 Q:DATA42568401/DATA FROM PHILLY/OFFICE DATA/GINT LOGS\INDSPEC BORING LOGS. GPJ ... 11/2/2009 3:09:24 PM ... Report. Log - LANGAN ...Template LANGAN. GDT Set bottom of 4 inch well screen at 50.1 feet below End of Boring @ 50.1 ft ground surface. Terminated air rotary drilling at 51 50.1 feet below ground surface on 7/23/04. 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69



ENGINEERING & ENVIRONM	MENTAL SERVICES	Log	of E	Boring			вн	68D			Shee	et	1	of	9
Project Properties				oject No.			050	0440				East			040.000
Beazer/INDSPEC Properties Location				evation ar	nd Da	atum		8412				-	North	1430	249.328
Petrolia, Pennsylvan	ıia						130	1.2 NA	AVD 19					620	930.114
Drilling Agency	a Company		Da	ite Starte	d			7/2/04		Dat	e Finishe	d	7/	12/04	
Pennsylvania Drilling Drilling Equipment	j Company		Co	mpletion	Dep	th		7/2/04		Roc	k Depth			13/04	
Acker Hybrid Drill Ri	ig/CMI Air Rotary Rig							214 ft	:					7 ft	
1 21	Size and Type of Bit 10" OD Hollow Stem Auger/6" OD Roller Bit			Number of Samples Disturbed Undisturbed N/A								Core	N/A		
Casing Diameter (in) Casing Depth (ft) Casing Depth (7t)				ater Leve	l (ft.))	First			1	Completion 47.8			24 HR.	55.9
Casing Hammer N/A Weight (lbs) N/A Drop (in) N/A				Drilling Foreman								<u></u> `	50.0		
Sampler N/A	Earl Dye														
	Veight (lbs) N/A	Drop (in) N/A	Inspecting Engineer Dennis Webster/Cris Schwarz												
	I W/A	IN//A	_				Sa	mple D		3 0	CHWAIZ		Don	orko	
WATERIAL SYMBOL SAMBOL	nple Description			Depth Scale	Number	Type	Recov. (in) Penetr.		PIC Read (ppr			Drilling	Ren Fluid, I	narks Depth of C	asing,
āl I	Su			_ 0 _	Ž	F.	Re	Pe BL	(ppr			(Drilling Fluid, Depth of Casing Fluid Loss, Drilling Resistance, e			
Dark brown organic TOPSC	IL, some roots (moist	1)												auger an was per	
Light orange to brown silty C	CLAY, some tan weath	nered sandstone		1 -										struction	
fragments, trace fine to me							1					summary MW-68D for a detailed description of the installed well.			
				2 -	1_	ËR									
				3 -		AUGER	1								
				4 -											
Light brown to light gray silt	Light brown to light gray silty SAND, increase amounts of weathered														
reddish brown sandstone (d	ıry)			6 -											
				- 0 -											
				- 7 -											
					7	3EF									
				- 8 -	``	AUGE									
				- 9 - -											
				10 -											
Light gray SANDSTONE, tra	ace coal fragements (some reddish			┝	1					l E	ncoun	itered	hollow s	tem
orange silty clay, medium gr	rained, moderately har	rd and weak,		11 -			$\ \ $				aı	uger r	efusal	set botto ing/ beg	om of 8
moderately weathered				40		{	$\ \cdot \ $					tary.	ci cas	iiig/ beg	aii aii
*****See Boring Log BH68E coring activities****	for detailed lithologic of	descriptions from		- 12 -		{]								
Coming activities				- 13 -]								
						}	$\ \cdot \ $								
				14 -			$\ \ $								
				4-		AR]								
				<u> </u>	-	RROT	$\ \cdot \ $								
				_ 16 _		1	$\ \cdot \ $								
\[\frac{1}{2} \fr]								
				17 -	1										
				= =====================================	1	}	$\ \ \ $								
f				- 18 - 		{]								
				- - 19 -]								
				<u> </u>			$\ \ \ $								



BH68D Log of Boring Sheet 2 of 9 Project No. East Beazer/INDSPEC Properties 1430249.328 2568412 Elevation and Datum North Location Petrolia, Pennsylvania 1301.2 NAVD 1988 620930.114 Sample Data Remarks Depth Scale PID Reading (ppm) Recov.
(in)
Penetr.
resist
BL/6in Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) 20 21 22 Very smooth and fast hammering due to weathered/soft sandstone. 23 24 25 26 27 Dry cutting return. 28 29 30 31 32 33 34 35 36 37 38 Continued dry cutting return. 39 Binding of hammer, slowed speed. Moist, gray cutting return. 43



BH68D Log of Boring Sheet 3 of 9 Project No. East Beazer/INDSPEC Properties 1430249.328 2568412 Location Elevation and Datum North Petrolia, Pennsylvania 1301.2 NAVD 1988 620930.114 Sample Data Remarks Depth Scale PID Reading (ppm) Recov.
(in)
Penetr.
resist
BL/6in Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Saturated cutting return, dark gray to black, coal seem. 46 Gray SANDSTONE, fine to medium grained, moderately hard and strong, moderately weathered 49 50 52 53 55 57 58 Dark black COAL 59 60 Gray SANDSTONE, medium to fine grained, moderately hard and strong, trace claystone 61 62 63 64 66 67 68 69



BH68D Log of Boring Sheet of 9 Project Project No. East 1430249.328 Beazer/INDSPEC Properties 2568412 Location Elevation and Datum North Petrolia, Pennsylvania 1301.2 NAVD 1988 620930.114 Sample Data Remarks Depth Scale PID Reading (ppm) Recov. (in)
Penetr. resist
BL/6in Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) 9 72 73 Good water and cutting return, dark gray. 78 79 80 82 83 85 87 88 89 Continued smooth hammering and good cutting/water return. 92 93



Log of Boring BH68D Sheet 5 of 9 **ENGINEERING & ENVIRONMENTAL SERVICES** Project No. East Beazer/INDSPEC Properties 2568412 1430249.328 Location Elevation and Datum North Petrolia, Pennsylvania 1301.2 NAVD 1988 620930.114 Sample Data Remarks Depth Scale Penetr. resist BL/6in Number Sample Description Type (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Reading (ppm) 96 97 98 99 DATA FROM PHILLYOFFICE DATA/GINT LOGS\INDSPEC BORING LOGS. GPJ ... 1/27/2010 3:05:41 PM ... Report: Log - LANGAN ...Template LANGAN.GDT 100 Dark gray to black SILTSTONE, some coal, very fine grained, low hardness, weak, moderately weathered 102 103 104 105 Dark gray to black cutting and water return. 106 107 108 109 110 112 113 114 **AIRROTAR**) Light to dark gray, brown SANDSTONE, mica flakes, fine to medium grained, moderately hard and strong 116 118 119



BH68D Log of Boring Sheet 6 of 9 Project No. East 1430249.328 Beazer/INDSPEC Properties 2568412 Elevation and Datum North Location Petrolia, Pennsylvania 1301.2 NAVD 1988 620930.114 Sample Data Remarks Depth Scale PID Reading (ppm) Recov.
(in)
Penetr.
resist
BL/6in Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) 121 122 123 124 125 Slight binding of hammer, slowed speed. 126 127 128 129 130 131 132 133 134 135 136 137 138 139 Very fast hammering, possible soft zone, gray water return. Dark gray CLAYSTONE, some shale, very fine grained, friable 143



BH68D Log of Boring Sheet 7 of 9 Project Project No. East 1430249.328 Beazer/INDSPEC Properties 2568412 Location Elevation and Datum North Petrolia, Pennsylvania 1301.2 NAVD 1988 620930.114 Sample Data Remarks Depth Scale Recov. (in)
Penetr. resist PID Reading (ppm) Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) 146 148 149 150 151 152 153 154 155 156 157 158 159 160 Dark black COAL 161 – 162 163 164 165 166 167 168 169



BH68D Log of Boring Sheet 8 of 9 Project No. East 1430249.328 Beazer/INDSPEC Properties 2568412 Elevation and Datum North Location Petrolia, Pennsylvania 1301.2 NAVD 1988 620930.114 Sample Data Remarks Depth Scale PID Reading (ppm) Recov. (in) Penetr. resist BL/6in Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Dark gray CLAYSTONE 16 171 172 173 Continued fast hammering. 176 178 179 180 181 182 183 184 Dark gray marine SHALE, very smooth, some claystone moderately hard and strong 186 187 188 189 Light gray LIMESTONE, highly fossiliferous (shells/brachipods), medium grained, moderately hard and strong 191 192 193 194



BH68D Log of Boring Sheet 9 of 9 Project No. East Beazer/INDSPEC Properties 1430249.328 2568412 Location Elevation and Datum North Petrolia, Pennsylvania 1301.2 NAVD 1988 620930.114 Sample Data Remarks Depth Scale PID Reading (ppm) Recov. (in)
Penetr. resist
BL/6in Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) 195 196 197 198 199 Set top of 4 inch well screen. 200 201 202 203 204 205 206 207 208 209 210 211 212 Q:\DATA4\2568401\DATA FROM PHILLY\OFFICE DATA\GINT 213 Set bottom of 4 inch well End of Boring @ 214 ft screen. AIRROTARY 216 - 8 217 218 219



	ENGINEERING & ENVIROR	NMENTAL SERVICES	Log	of I	Boring			вн	68E			Sheet	1	of	12	
Project				Pi	roject N	Ο.							East			
Lasation	Beazer/INDSPEC	Properties		1	laat:a.a	d D	-4		8412				North		30262.46	
Location Petrolic Pennsylvania					Elevation and Datum 1301.62 NAVD 1988										0930.114	
Petrolia, Pennsylvania Drilling Agency				D	ate Star	ted		130	71.02 IV			Finished		020	7930.114	
Pennsylvania Drilling Company				6/30/04								7/2/04				
Drilling Equipment			C	Completion Depth Rock Depth												
Size and T	Acker Hybrid Drill Type of Bit 10" OD Hollow St	Rig/CMI Air Rotary Rig		-	275 ft Disturbed Undistur								6.2 ft			
	Roller Bit	em Augenz OD NA OC	JIE/O OD	N	Number of Samples 5						N/A				N/A	
Casing Diameter (in) 8" Steel/4" PVC Riser Casing Depth (ft) 9'/244'		w	Water Level (ft.)				50		ompletion 24 HI 55.2			68.9				
Casing Ha			Drilling Foreman								<u>*</u> 00	,. <u>L</u>		00.0		
Sampler	Sampler							arl D	ye							
Sampler H	2" x 2.0' OD Split Spoon mpler Hammer Weight (lbs) 440 lbs Drop (in) 20"				Inspecting Engineer											
<u> </u>	Auto	140 lbs	30"	#			ט		s Webs							
MATERIAL	Sam	nple Description		Coring min/ ft	Depti	ı ja	l g					(Drillin		marks	Casina	
SYN	Odii	ipic Description		Soring	Scale	Number	Type	Recov.	(in) Penetr. resist r. resist dispersion (ppm) Reading (ppm) PD Reading (ppm) Reading (ppm) PD Reading (ppm)			Fluid Lo	ss, Drill	ing Resista	Depth of Casing, ng Resistance, etc.)	
\$ \frac{1}{2} \cdot \frac{1}{2	Dark brown organic TOP	SOIL, some roots (mois	st)		上 0	\pm			3	0)			sampling		
	Light gray silty CLAY, sor	me subangular gravel ti	ace sandstone	-	<u> </u>	<u></u>	ဖြစ်	21	4	0				NX rock y drilling		
	fragements, (moist)	caranganan gi ai ci, a			Ė '	₫,	S	7	5	0		perform		actruction		
					2 detaile								See well construction summary MW-68E for a			
	Light orange to brown silt	v CLAY some tan wea	thered											cription o	of the	
	sandstone fragments, tra				$\begin{bmatrix} 2 & 3 & 1 & 2 & 3 & 3 & 3 & 3 & 3 & 3 & 3 & 3 & 3$							installed well.				
					Ė	=			18	0)					
	Light brown to light gray silty SAND, increase amounts of			1	F 4	1	T		14	0)					
	weathered reddish brown	sandstone (dry)			5	۳ ا	SS	9 9		0						
					Ė ,	1	S	7	6	0						
					- 6	+	╀	1	5	0						
	Light gray SANDSTONE,				F	3		1.	34	0						
	orange silty clay, solution hard and weak, moderate				7	₹ 4	SS	24	17 14	0)					
	degrees)		·		Ē,	1		22	50/4	0)					
	Gray to rusty orange SAN				8	7	Š	+						d split spo	oon	
	frequent fine carbonaceo iron stained, some thin ba				9 =						refusal. Encountered hollow auger refusal/set bo					
	to intensely fractured, slig	to moderately weath	ered, majority													
	of fractures are low angle	(20 degrees or less)			10							ch steel casing/began NX				
					F	=						rock c	oning.			
					- 11	7										
					F 40	3										
					12	=	١.	%								
					13	3	REL	=91%	=46%							
					į	=	3ARR	-								
	Gray to brown SANDSTO	ONE occasional discont	inuous carbon		_ 14		RE B	=109"/120'	RQD=55"/120"							
	Gray to brown SANDSTONE, occasional discontinuous carbon stringers/lenses with some distinct coal lenses, some small					=	SOR	-105	=22							
	solutions cavities, evidential along joints, deeply weath				_ 15	+	×	REG	g							
	along joints, deeply weathered, low hardness, weak strength, horizontal cross bedding, closely fractured along carbon]		% R								
	stringers/lenses (less that	n ∠u aegrees)			<u> </u>	=	REL	%98=	%9 5 =							
					17	=	AR	-								
					E	4		REC=103"/120	RQD=67"/120"							
					18	-	SOR	103	-67							
					Ė	=	X		Ö							
					_ 19	1	_	₹	~						added 0.4	
					F	1						gallón				



BH68E Sheet Log of Boring 2 of 12 **ENGINEERING & ENVIRONMENTAL SERVICES** Project No. East Project Beazer/INDSPEC Properties 2568412 1430262.46 Location Elevation and Datum North 1301.62 NAVD 1988 620930.114 Petrolia, Pennsylvania Sample Data Coring min/ Remarks Depth Scale Penetr. resist BL/6in Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Reading (ppm) 20 REC=103"/120" =86% RQD=67"/120" =56% 22 23 24 25 Brown gray SANDSTONE, medium to fine grained, becoming :35 gary sandstone as weathering zone grades out at 26, continued frequent fine carbon/coal stringers/laminations with occasional thin coal lenses, closely jointed fractures, with locally intense 26 :28 and moderate fracturing, continued surface pitting/solution voids and rip up clasts, some trace of siltstone/claystone Slight binding of core bit, :19 slowed rotation speed. 28 RQD=97.5"/120" =81% REC=115"/120" =96% :30 29 Continued smooth and steady 2:15 coring. 30 :25 :33 :23 :33 :33 35 Gray SANDSTONE, fine to medium grained, frequent :27 discontinuous carbon laminations/coal stringers, moderately hard and strong, upper four feet closely fractured both vertical and horizontal, small coal seem (0.1 feet) at 37.6 feet, frequent :18 coal laminations grading out at 39.3 feet, continued surface pitting/solution voids, increased frequency of rip up clasts 37 :47 38 RQD=116"/120" =97% :17 REC=119"/120" =99% 39 :20 :21 :27 :26 :33 :49



BH68E Sheet Log of Boring 3 of 12 Project No. East Beazer/INDSPEC Properties 2568412 1430262.46 Location Elevation and Datum North 1301.62 NAVD 1988 620930.114 Petrolia, Pennsylvania Sample Data Coring min/ Remarks Depth Sample Description Penetr. resist BL/6in (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Scale Reading (ppm) :19 Gray SANDSTONE, fine to medium grained, increased :33 amounts of coal stringers at 57.5 feet, moderately hard and strong, occasional oval and elliptical chert lenses, some surface pitting, majority of fractures were mechanical, :32 moderately weathered REC=117"/120" =98% RQD=115"/120" =96% :39 :42 :36 :24 :26 53 :17 :33 55 :30 :27 :28 58 No water return. REC=122"/120" =102% RQD=98.9"/120" =82% :20 59 Dark black COAL, moderately hard, weak, crushed fracturing Very fast drop with core bit, :10 possible soft zone. Gray SANDSTONE, fine to medium grained, thin band of claystone at 60 feet, moderately hard and strong, moderate 60 fracturing (less the 20 degrees) :12 :36 62 Increased drill rod rotation :46 63 2:30 Light brown CLAYSTONE, some fine silt, some coal 64 fragements, friable, friable to weak, severely weathered, intensely fractured (0-20, 20-65 degrees) 3:25 Light gray SANDSTONE, very fine grained, moderately hard to 1:18 weak, micaceous, increased thin (0.5 feet) bands of coal REC=113"/120" =94% stringers, moderately fractured along thin bands of coal RQD=90"/120" =75% 1:48 67 1:18 68 69 1:20



BH68E Sheet Log of Boring of 12 **ENGINEERING & ENVIRONMENTAL SERVICES** Project No. East Project Beazer/INDSPEC Properties 2568412 1430262.46 Location Elevation and Datum North 1301.62 NAVD 1988 620930.114 Petrolia, Pennsylvania Sample Data Coring min/ Remarks Depth Scale Penetr. resist BL/6in Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Reading (ppm) Slight binding of core bit, 1:20 added 1 gallon of drill mud. REC=113"/120" =94% RQD=90"/120" =75% 1:33 1:20 73 1:21 1:22 75 1:06 Gray SANDSTONE, medium to fine grained, thin laminations of carbon material, micaceous, moderately hard and strong, intensely fractured from 75.5 to 78.5 feet, majority of fractures 1:62 horizontal (0-20 degrees), some thin claystone bands at 88.5 1:45 78 RQD=77.5"/120" =65% REC=116"/120" =97% 1:28 79 1:37 80 1:17 :37 82 :55 83 Increased rotations speed, faster coring, possible soft :31 zone. :40 Steady water return, smooth 1:11 coring with steady rotation speed. :37 :33 88 REC=112"/120" =93% :29 RQD=95"/120" =79% 89 :41 Gray SANDSTONE, fine grained, micaceous, carbon stringers, 1:32 moderately hard and strong, little weathering, moderately fractured, majority of fractures horizontal (0-10 degrees), some thin dark gray siltstone bands at 94.1 feet :57 92 :48 93 :30 :27



Log of Boring BH68E Sheet 5 of 12 **ENGINEERING & ENVIRONMENTAL SERVICES** Project No. East Project Beazer/INDSPEC Properties 2568412 1430262.46 Location Elevation and Datum North Petrolia, Pennsylvania 1301.62 NAVD 1988 620930.114 Sample Data Coring min/ Remarks Depth Scale Penetr. resist BL/6in Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Reading (ppm) Drill rods binding, slowed :20 rotation speed, added 0.5 gallon drill mud. 96 :29 97 :31 98 REC=117"/120" =98% RQD=100"/120" =83% :28 99 1:35 100 Increased drill rod rotation :38 speed, smooth and fast coring. :39 102 :39 103 :41 FROM PHILLY/OFFICE DATA/GINT LOGS\INDSPEC BORING LOGS.GPJ ... 11/2/2009 3:09:42 PM ... Report: Log -104 Dark gray to black SILTSTONE, thin bands of coal, very fine ************ :41 grained, low hardness, weak, moderately weathered 105 :36 106 :58 :37 108 REC=116"/120" =97% :40 RQD=97"/120" =81% 109 :51 1:31 1:45 1:49 113 1:34 114 1:49 No water return. Light to dark gray SANDSTONE, mica flakes, pyrite veins (1-3 1:16 inches thick), thin laminations of dark black fine sands, fine to medium grained, moderately hard and strong, moderately REC=116"/120" =97% RQD=109"/120" =91% fractured (0-15 degrees) 1:00 1:06 118 1:08 :48



Log of Boring BH68E Sheet of 12 6 **ENGINEERING & ENVIRONMENTAL SERVICES** Project Project No. East Beazer/INDSPEC Properties 2568412 1430262.46 Location Elevation and Datum North Petrolia, Pennsylvania 1301.62 NAVD 1988 620930.114 Sample Data Coring min/ Remarks Depth Scale Penetr. resist BL/6in Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Reading (ppm) 1:06 =91% REC=116"/120" =97% :58 RQD=109"/120" 122 :56 123 :53 :57 125 1:00 126 :38 :42 128 REC=116"/120" =97% RQD=109"/120" =91% :37 129 :35 5 130 2:01 2:00 132 :37 :32 134 :28 135 Dark gray CLAYSTONE, some fine sands, very fine grained, friable, closely fractured both vertical and inclined (0-25 Smooth coring, steady/fast :52 rotation speed. degrees) 136 :51 137 :42 138 :37 REC=97"/120" =81% RQD=79"/120" =66% 139 :32 :28 Performed HCL test, no reaction. :40 :36 143 :32 :27



Log of Boring BH68E Sheet 7 of 12 Project Project No. East Beazer/INDSPEC Properties 2568412 1430262.46 Location Elevation and Datum North 1301.62 NAVD 1988 620930.114 Petrolia, Pennsylvania Sample Data Coring min/ Remarks Depth Scale Number Penetr. resist BL/6in Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Reading (ppm) :23 146 :51 :53 148 REC=99"/120" =83% :57 RQD=82"/120" =68% 149 Template LANGAN.GD 1:30 Dark gray marine SHALE, very smooth, trace claystone 2:00 laminations, fine grained, moderately hard and strong, little fractures 2:13 152 2:30 153 2:41 154 1:31 155 Continued fast and smooth 1:21 156 0:52 0:49 158 BORING LOGS.GPJ 1:07 REC=96"/120" =80% RQD=82"/120" =68% 159 Dark black COAL, pyrite veins, low harness, weak, crushed :51 fracturing 9 160 :58 1:31 162 1:23 163 2:10 164 1:02 165 Slight binding of drill rods, added 2 gallons of drill mud. 1:02 REC=112"/120" =93% RQD=99"/120" =83% 166 :40 167 :47 168 Dark gray CLAYSTONE, trace marcasite and pyrite, very fine grained, friable, weak, little fractures, (0-5 degrees) 169 :51



Log of Boring BH68E Sheet of 8 12 Project Project No. East Beazer/INDSPEC Properties 2568412 1430262.46 Location Elevation and Datum North Petrolia, Pennsylvania 1301.62 NAVD 1988 620930.114 Sample Data Coring min/ Remarks Depth Scale Penetr. resist BL/6in Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Reading (ppm) :59 REC=112"/120" =93% RQD=99"/120" =83% :53 :51 :46 1:08 1:01 1:02 :58 178 REC=120"/120" =100% RQD=120"/120" =100% :59 179 :52 180 1:08 1:14 182 Dark gray marine SHALE, very smooth, trace claystone laminations, fine grained, moderately hard and strong, little 1:14 fractures, some evident fossils appearing at 192 feet (shells 183 LOGS\INDSPEC BORING LOGS.GPJ and brachiopods) 1:20 184 1:05 185 1:27 186 1:27 187 1:00 68401/DATA FROM PHILLY/OFFICE DATA/GINT 188 RQD=113.5"/120" =95% REC=120"/120" =100% 1:02 189 1:16 190 1:12 1:36 192 1:24 Performed HCL test, positive Light gray LIMESTONE, highly fossiliferous (shells/brachipods), 193 reaction for Vanport Limestone at 192.7 feet below ground medium grained, moderately hard and strong, closely fractured 1:24 (0-20 degrees) surface. 194 1:54



Log of Boring BH68E Sheet of 12 9 Project Project No. East Beazer/INDSPEC Properties 2568412 1430262.46 Location Elevation and Datum North Petrolia, Pennsylvania 1301.62 NAVD 1988 620930.114 Sample Data Coring min/ Remarks Depth Scale Recov. (in) Penetr. resist BL/6in Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Reading (ppm) 1:56 196 4:56 1:41 198 REC=107"/120" =89% 1:07 RQD=96"/120" =80% 199 1:05 20 200 1:03 201 1:37 202 1:23 203 1:01 204 :59 205 :57 206 1:01 207 1:18 208 REC=100"/120" =83% 1:32 RQD=40"/120" =33% 209 1:52 210 0:52 :49 212 :47 213 0:52 Light gray CLAYSTONE, calcite veins, some shell fossils, very fine grained, low hardness, friable, close vertical fractures, 214 Performed HCL test, no frequent carbon laminations/coal stringers reaction marking end of :48 Vanport Limestone at 214 feet below ground surface. :47 REC=115"/120" =96% RQD=60"/120" =50% Slight binding of drill rods. :50 :50 218 Smooth and fast coring. 1:07 219 1:27



Log of Boring BH68E Sheet of 10 12 Project No. East 1430262.46 Beazer/INDSPEC Properties 2568412 Location Elevation and Datum North Petrolia, Pennsylvania 1301.62 NAVD 1988 620930.114 Sample Data Coring min/ Remarks Depth Scale Penetr. resist BL/6in Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Reading (ppm) :56 REC=115"/120" =96% 221 RQD=60"/120" =50% 1:03 222 1:01 223 :52 :49 225 :57 226 :57 :59 228 REC=120"/120" =100% RQD=96.5"/120" =80% 1:01 229 Dark black COAL, pyrite veins, low harness, weak, crushed fracturing, some thin bands of claystone and fine grained 1:11 sandstone at 234 feet 23 230 1:09 231 1:12 232 1:01 233 :57 234 :50 235 Light gray to black SANDSTONE, fine to medium grained, :32 some thin bands of claystone, micaceous, moderately hard and strong, fractures occuring along thin bands of claystone 236 Rods binding, slowed rotation :57 speed, added 1 gallon of drill mud. 237 238 RQD=72.5"/120" =60% REC=118"/120" =98% 239 242 243 Set top of 4 inch well screen.



Log of Boring BH68E Sheet of 12 11 **ENGINEERING & ENVIRONMENTAL SERVICES** Project Project No. East 2568412 1430262.46 Beazer/INDSPEC Properties Location Elevation and Datum North Petrolia, Pennsylvania 1301.62 NAVD 1988 620930.114 Sample Data Coring min/ Remarks Depth Scale Recov. (in) Penetr. resist BL/6in Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Reading (ppm) 246 248 REC=119"/120" =99% RQD=112"/120" =93% 249 252 253 254 255 256 :47 Rods binding, slowed rotation speed, added 1 gallon of drill :51 258 REC=114"/120" =95% :53 RQD=95"/120" =79% 259 Set bottom of 4 inch well :53 screen. 260 Gray SANDSTONE, medium to coarse grained, frequent thin bands of black coal stringers, some thin bands of white fine :42 grained sands, moderately hard and strong, little fracturing 261 :49 262 :49 263 :43 264 :57 265 :59 REC=120"/120" =100% RQD=115"/120" =96% 266 1:01 267 1:09 268 1:02 269 2:10



Log of Boring BH68E Sheet 12 of 12 Project No. East 2568412 1430262.46 Beazer/INDSPEC Properties Location Elevation and Datum North Petrolia, Pennsylvania 1301.62 NAVD 1988 620930.114 Sample Data Coring min/ Remarks Depth Scale Recov. (in) Penetr. resist BL/6in Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Reading (ppm) Same as above except increased amounts of coarse grained 1:59 sandstone REC=120"/120" =100% **%96=** 2:01 RQD=115"/120" 272 2:22 273 2:01 Q:DATA42568401/DATA FROM PHILLY/OFFICE DATA/GINT LOGS\INDSPEC BORING LOGS. GPJ ... 11/2/2009 3:09:45 PM ... Report. Log - LANGAN ...Template LANGAN. GDT 1:17 Terminate borhole at 275 feet End of Boring @ 275 ft 1:20 below ground surface. 276 277 278 RQD=103.5"/120" =86% REC=119"/120" =99% 279 280 -281 282 283 284 285 286 287 288 289 290 291 292 293 294

295



BH69D Sheet Log of Boring of 14 1 Project No. East Project Beazer/INDSPEC Properties 2568412 1428165.652 Location Elevation and Datum North Petrolia, Pennsylvania 1423.12 NAVD 1988 622349.805 Drilling Agency Date Started Date Finished 6/10/04 Pennsylvania Drilling Company 6/16/04 **Drilling Equipment** Completion Depth Rock Depth Acker Hybrid Drill Rig/CMI Air Rotary Rig 325 ft 10 ft Size and Type of Bit Disturbed Undisturbed Core Number of Samples 10" OD Hollow Stem Auger/6" OD Roller Bit 5 N/A N/A Casing Depth (ft) Casing Diameter (in) Completion 24 HR. First Water Level (ft.) 8" Steel/4" PVC Riser 11'/310' 67.5 80.7 85.1 Drop (in) N/A Drilling Foreman Casing Hammer Weight (lbs) N/A N/A Earl Dye Sampler 2" x 2.0' OD Split Spoon Inspecting Engineer Drop (in) 30" Sampler Hammer Weight (lbs) 140 lbs Dennis Webster Sample Data MATERIAL SYMBOL Remarks Depth PID Number Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Type LANGAN.GD Scale (ppm) Split spoon sampling, hollow 11/2 11/2 Dark brown to black organic TOPSOIL, trace silty clay, some 0 stem auger and air rotary subangular gravel, roots and leaf matter (dry) 0 drilling was performed. 7 0 Light brown silty CLAY, trace subangular gravel and tan sandstone See well construction summary MW-69D for a fragements (dry) 0 3 detailed description of the 2 0 5 installed well. 0 6 20 3 α 0 11 0 13 Encountered highly mottled 0 14 soils from 4 - 6 feet below 0 13 ground surface indicating 24 5 က 0 possible perched water 15 conditions. 0 14 6 0 15 Yellowish brown silty SAND, increased amounts of tan sandstone 0 10 24 fragements with iron staining, some mica 0 0 8 0 8 0 9 S 2 Dark to light gray SANDSTONE, trace mica, thin bands of fine 0 12 grained red sands, medium grained, moderately hard and weak, 0 15 moderately weathered, intensely fractured Encountered split spoon refusal. ****See Boring Log BH69E for detailed lithologic descriptions from coring activities* Encountered hollow stem auger refusal/set bottom of 8 inch steel casing/started air 12 rotary drilling. 13 No water return. 16 Good cutting return. 18 Light to dark gray SANDSTONE, large amounts of fine black and brown sand cross bedding, fine to medium grained, low to moderately hard, weak to moderately strong 19



BH69D Log of Boring Sheet 2 of 14 Project No. East 1428165.652 Beazer/INDSPEC Properties 2568412 Location Elevation and Datum North Petrolia, Pennsylvania 1423.12 NAVD 1988 622349.805 Sample Data Remarks Depth Scale PID Reading (ppm) Recov. (in)
Penetr. resist
BL/6in Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) 20 21 22 23 24 25 26 27 Possible soft zone, very smooth and easy hammering. 28 29 30 Continued dry cutting return. 31 32 34 35 36 37 38 Binding of hammer, slowed speed. 39



BH69D Log of Boring Sheet 3 of 14 Project No. East 1428165.652 Beazer/INDSPEC Properties 2568412 Location Elevation and Datum North Petrolia, Pennsylvania 1423.12 NAVD 1988 622349.805 Sample Data Remarks Depth Scale PID Reading (ppm) Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Continued dry cutting return. 46 48 49 52 53 55 59 60 Moist, gray cutting return. 61 62 63 64 68 69 Saturated cutting return, dark



BH69D Log of Boring Sheet of 14 ENGINEERING & ENVIRONMENTAL SERVICES Project No. East 1428165.652 Beazer/INDSPEC Properties 2568412 Location Elevation and Datum North Petrolia, Pennsylvania 1423.12 NAVD 1988 622349.805 Sample Data Remarks Depth Scale PID Reading (ppm) Recov. (in)
Penetr. resist
BL/6in Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) gray to brown. 72 73 Good water and cutting return, dark to light gray. 78 79 82 84 85 86 87 88 89 Continued smooth hammering and good cutting/water return. 92 93



BH69D Log of Boring Sheet 5 of 14 Project Project No. East 1428165.652 Beazer/INDSPEC Properties 2568412 Location Elevation and Datum North Petrolia, Pennsylvania 1423.12 NAVD 1988 622349.805 Sample Data Remarks Depth Scale Recov. (in)
Penetr. resist PID Reading (ppm) Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) 96 97 98 99 100 101 102 103 104 105 106 107 108 109 112 113 114 115 116 118 119



Log of Boring BH69D Sheet 6 of 14 Project No. East Beazer/INDSPEC Properties 2568412 1428165.652 Location Elevation and Datum North Petrolia, Pennsylvania 1423.12 NAVD 1988 622349.805 Sample Data Remarks Depth Scale PID Reading (ppm) Recov. (in)
Penetr. resist
BL/6in Number Type Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) 121 122 123 124 125 126 127 128 129 130 Greenish gray SILTSTONE, turbites, very fine grained, low to Q:DATA4V268401/DATA FROM PHILLY\OFFICE DATA\GINT LOGS\INDSPEC BORING LOGS.GPJ ... 1/27/2010 3:05:56 PM .. moderately hard, weak 131 132 133 134 135 136 137 138 139 143



Log of Boring BH69D Sheet 7 of 14 Project Project No. East 1428165.652 Beazer/INDSPEC Properties 2568412 Location Elevation and Datum North Petrolia, Pennsylvania 1423.12 NAVD 1988 622349.805 Sample Data MATERIAL SYMBOL Remarks Depth Scale Number Recov. (in) Penetr. resist BL/6in Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Reading (ppm) 146 148 149 Report: Log - LANGAN ...Template LANGAN.GDT 150 152 153 154 Light gray CLAYSTONE, very fine grained, friable, weak 155 156 157 158 159 160 Dark gray to black water return. 161 162 Light to dark gray tan SANDSTONE, carbon stringers, micaceous, medium to coarse grained, low to moderately hard, weak to moderately strong 163 164 165 166 167 168 169



Log of Boring BH69D Sheet 8 of 14 ENGINEERING & ENVIRONMENTAL SERVICES Project No. East Beazer/INDSPEC Properties 2568412 1428165.652 Location Elevation and Datum North Petrolia, Pennsylvania 1423.12 NAVD 1988 622349.805 Sample Data MATERIAL SYMBOL Remarks Depth Scale Penetr. resist BL/6in Number Type Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Reading (ppm) Dark gray to black SILTSTONE, very fine grained, smooth, low hardness, weak 172 173 //27/2010 3:05:57 PM ... Report: Log - LANGAN ...Template LANGAN.GDT 175 176 178 179 180 181 182 Gray SANDSTONE, micaceous, some coal fragements, medium to course grained, moderately hard and strong 183 184 185 186 187 188 189 191 192 193 194



BH69D Log of Boring Sheet 9 of 14 ENGINEERING & ENVIRONMENTAL SERVICES Project Project No. East Beazer/INDSPEC Properties 1428165.652 2568412 Location Elevation and Datum North Petrolia, Pennsylvania 1423.12 NAVD 1988 622349.805 Sample Data Remarks Depth Scale PID Reading (ppm) Recov.
(in)
Penetr.
resist
BL/6in Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) 195 196 197 198 199 Light gray SANDSTONE, micaceous, abundant coal fragements, very fine grained, moderately hard and strong, little to no natural fractures 200 Losing water and cutting return. 201 202 203 204 205 -206 207 208 209 210 211 212 213 214 215 216 217 218 219



Log of Boring BH69D Sheet of 10 14 Project No. East Beazer/INDSPEC Properties 2568412 1428165.652 Location Elevation and Datum North Petrolia, Pennsylvania 1423.12 NAVD 1988 622349.805 Sample Data Remarks Depth Scale Number Recov. (in) Penetr. resist BL/6in Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Reading (ppm) 221 222 223 224 225 226 227 228 -OGS.GPJ ... 1/27/2010 3:05:58 PM ... Report: Log -229 Light gray marine SILTSTONE, abundant coal fragements, very fine grained, low to moderately hard, weak to moderately strong 230 231 232 233 Dark black COAL, very soft and friable 235 236 237 238 239 Very choppy hammering, good water/cutting return. Light to dark gray SANDSTONE, micaceous, coal fragements, fine grained, moderately hard and strong 242 243



Log of Boring BH69D Sheet of 11 14 Project No. East Beazer/INDSPEC Properties 2568412 1428165.652 Location Elevation and Datum North Petrolia, Pennsylvania 1423.12 NAVD 1988 622349.805 Sample Data Remarks Depth Scale Penetr. resist BL/6in Number Recov. (in) Sample Description Type (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Reading (ppm) 246 248 249 250 251 252 253 254 AIRROTAR 255 Light gray SILTSTONE, very smooth/fine grained, friable to low Q:DATA4V268401/DATA FROM PHILLY\OFFICE DATA\GINT LOGS\INDSPEC BORING LOGS.GPJ ... 1/27/2010 3:05:58 PM .. hardness, weak to moderately strong, intense fracturing (glass like fracture face) 256 257 258 259 260 261 262 263 264 265 266 267 268 269



Log of Boring BH69D Sheet of 12 14 **ENGINEERING & ENVIRONMENTAL SERVICES** Project No. East 2568412 Beazer/INDSPEC Properties 1428165.652 Location Elevation and Datum North Petrolia, Pennsylvania 1423.12 NAVD 1988 622349.805 Sample Data Remarks Depth Scale Number Penetr. resist BL/6in Sample Description Type (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Reading (ppm) 271 272 273 Light gray CLAYSTONE, some siltstone, coal stringers, very fine grained, friable, weak, deeply weathered Tolate LANGAN.GD 275 276 277 278 279 280 Harder hammering, more competent rock, continued good water/cutting return. 281 282 283 Q:DATA4\2568401\DATA FROM PHILLY\OFFICE DATA\GINT LOGS\INDSPEC BORING LOGS.GPJ 284 AIRROTAR 285 Dark black water return. Light gray SILTSTONE, very fine grained, carbon stringers, low ***** hardness, weak, little fracturing 286 287 288 289 290 291 292 293 294



BH69D Log of Boring Sheet 13 of 14 ENGINEERING & ENVIRONMENTAL SERVICES Project No. East 1428165.652 Beazer/INDSPEC Properties 2568412 Elevation and Datum North Location Petrolia, Pennsylvania 1423.12 NAVD 1988 622349.805 Sample Data Remarks Depth Scale PID Reading (ppm) Recov. (in) Penetr. resist BL/6in Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) 295 Light gray LIMESTONE, highly fossiliferous (shells/brachipods), medium grained, moderately hard and strong 296 297 298 299 300 Smooth and steady hammering , increased water return. 301 302 303 304 305 -Choppy hammering, light gray water return. 306 307 308 309 310 Set top of 4 inch well screen. 311 312 313 314 315 316 317 318 319



BH69D Log of Boring Sheet of 14 14 Project No. East Beazer/INDSPEC Properties 1428165.652 2568412 Location Elevation and Datum North Petrolia, Pennsylvania 1423.12 NAVD 1988 622349.805 Sample Data Remarks Depth Scale PID Reading (ppm) Number Recov. (in)
Penetr. resist
BL/6in Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) 320 Hard hammering increased water return. 321 322 323 324 Q:DATA42568401/DATA FROM PHILLY/OFFICE DATA/GINT LOGS\INDSPEC BORING LOGS.GPJ ... 1/27/2010 3:06:00 PM ... Report. Log - LANGAN ...Template LANGAN. GDT Terminated borehole at 325 End of Boring @ 325 ft feet below ground surface/set bottom of 4 inch well screen. 326 327 328 329 330 331 332 333 334 335 336 337 338 339 340 341 342 343 344



ENGINEERING & ENVIRONMENTAL SERVICE	! :s	Log	of E	Boring			вн	69E			Sheet	1	of	16	
Project			Pr	Project No.								East			
Beazer/INDSPEC Properties Location				2568412 Elevation and Datum North									142	8154.996	
Petrolia, Pennsylvania								2.12 N	IAVD 1	988			6	22359.92	
Drilling Agency				ate Starte	d					Date	Finished				
Pennsylvania Drilling Company Drilling Equipment			Co	ompletion	Den	ıth	5	/25/04		Roc	k Depth	6	5/10/04		
Acker Hybrid Drill Rig/CMI Air Rotary Rig			1	mpietion	Бер	ui	3	80.5 ft		i (OC	Късри		8 ft		
Size and Type of Bit 10" OD Hollow Stem Auger/2" OD NX Core/6" OD			l _{Ni}	Number of Samples Disturbed							Undisturbed Core				
Roller Bit Casing Diameter (in) Casing Depth (ft)			+	First Completion								24 HR.	N/A		
8" Steel/4" PVC Riser 10.5'/365.5' asing Hammer Weight (lbs) Drop (in)			ater Leve	. ,		∑ 85.9				<u>▼</u> 17	73	$ar{ar{\Lambda}}$	171		
N/A N/A				illing i on	ciliai		arl D	ve							
Sampler N/A					Engir		un D	, -							
Sampler Hammer N/A Weight (lbs)	N/A	Drop (in) N/A	 		1	D		Mebs	ster/Jas	on l	Hanna				
Sample Descriptio	n		Coring min/ ft	Depth jg				_	PIE)	_		marks		
Sample Descriptio	11		Soring	Scale	Number	Туре	Recov. (in) Penetr. resist		Reading (ppm)		(Drillin Fluid Los	g Fluid, Depth of Ca s, Drilling Resistan		Casing, ince, etc.)	
Dark brown to black organic TOPSOIL, tra		y, some	0	E 0 -			ı						auger/N		
subangular gravel, roots and leaf matter (d	• /			_ 1 _							was pe	erform		Ü	
Light brown silty CLAY, trace subangular (sandstone fragements (dry)	gravel and t	tan		<u> </u>									nstruction W-69E f		
				_ 2 -		GER	ŀ				detaile	d des	cription of		
					-						installe	ea wei	·		
				3 -	1	₹									
				4 -	1										
				Ē :											
Yellowish brown silty SAND, increased amounts of tan				5 -	-										
	sandstone fragements with iron staining, some mica (dry)			Ē ,	1	1									
				6 -	1										
				7 -	}										
				E	7	AUGER									
Brown to tan SANDSTONE, increased an				- 8 -		AU									
thin bands of fine grained red sands, med hardness, friable, deep weathering, crush				9 -	=										
3, 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1		J													
Dark to light gray SANDSTONE, trace mid	ca thin ban	nds of fine		10		1 1									
grained red sands, medium grained, mode	erately hard	and weak,			\vdash									m auger	
moderately weathered, intensely fractured				_ 11 -	1								ottom of began N		
				12 -	1						coring.		•		
8 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1				ŧ :	1						- NO Wa	lei iel	uiii.		
2 · · · · · · · · · · · · · · · · · · ·			:45	13											
(***			:22	Ė ,, ;			4%	%!							
				14 -	1	RRE	=94%	=23%							
OANDOTONIE was discussed			:30	_ 15 -		BAF	120"	20"							
Brown and gray SANDSTONE, medium to moderately hard, weak to moderately stroi	ng, slight to	moderate			1)RE	REC=109"/120" REC6113"/120"	28"/1							
weathering, with localized areas of deep w	eathering a	along	:49	_ 16 -	KCOR	1 %	RQD=32"/120" = RQB=28"/120"								
,			:55	- - - -	1	BARREX	F.	284							
\$.00	E '' =	1	BAF	120"	20"							
			1:28	18 -	1	CORE	./60	1771							
<u> </u>				<u> </u>	1	CC	7=1	D=3							
<u> </u>			:44	<u> </u>		ź	RE(RQ							
				} .	4				I						



Log of Boring BH69E Sheet of 2 16 **ENGINEERING & ENVIRONMENTAL SERVICES** Project Project No. East Beazer/INDSPEC Properties 2568412 1428154.996 Location Elevation and Datum North Petrolia, Pennsylvania 1422.12 NAVD 1988 622359.92 Sample Data Coring min/ Remarks Depth Scale Penetr. resist BL/6in Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Reading (ppm) :25 21 REC=109"/120" =91% RQD=32"/120" =27% :32 22 :34 23 Light to dark gray SANDSTONE, large amounts of fine black and brown sand cross bedding, fine to medium grained, low to moderately hard, weak to moderately strong, moderately :51 24 fractured (0-20 degrees) 1:01 25 Continued no water return. 0:48 26 Chattering of drill rods, drillers added 2 gallons of drill mud. 1:01 27 :48 28 REC=114"/120" =95% :31 29 RQD=94"/120" =78% :32 30 :33 31 :27 32 :33 33 :33 34 :52 35 Continued no water return, drill rods binding/slowed rotation speed. :57 36 :36 37 :38 38 REC=106"/120" =88% RQD=82"/120" =68% :51 39 Core barrel blocked, removed 1:01 core and resumed drilling to complete 10 feet run. 1:06 1:48 2:30 3:09



Log of Boring BH69E Sheet of 3 16 **ENGINEERING & ENVIRONMENTAL SERVICES** Project Project No. East Beazer/INDSPEC Properties 2568412 1428154.996 Location Elevation and Datum North Petrolia, Pennsylvania 1422.12 NAVD 1988 622359.92 Sample Data Coring min/ f Remarks Depth Scale Penetr. resist BL/6in Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Reading (ppm) Same as above except trace amounts of light brown to gray 4 claystone bands, increased amounts of mica, highly fractured 1:28 46 1:27 2:40 48 REC=106"/120" =88% 1:38 49 RQD=15"/120" =13% Core bit binding, drillers added 2 gallons drill mud. 1:05 1:10 52 Increased rotation speed. 53 1:03 :41 54 1:23 55 1:17 56 :39 :40 58 RQD=31"/120" =26% :55 59 REC=62"/120" =52% 1:01 60 1:50 61 Drill rods binding, slowed rotation speed. 2:39 62 2:19 63 4:00 1:22 :52 66 REC=117"/120" =98% RQD=78"/120" =65% :55 67 Dark black COAL, moderately hard, weak, crushed fracturing :52 68 :59 69 Continued steady rotation



Log of Boring BH69E Sheet of 4 16 **ENGINEERING & ENVIRONMENTAL SERVICES** Project Project No. East Beazer/INDSPEC Properties 2568412 1428154.996 Location Elevation and Datum North Petrolia, Pennsylvania 1422.12 NAVD 1988 622359.92 Sample Data 1:13 Coring min/ f Remarks Depth Scale Penetr. resist BL/6in Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Reading (ppm) speed. 1:15 REC=117"/120" =98% RQD=78"/120" =65% :40 72 :25 73 :25 1:12 No return water, steady drilling Light brown CLAYSTONE, some fine silt, thin bands of pyritic and rotation speed. sandstone, friable, friable to weak, slightly weathered, intensely fractured (0-20, 20-65 degrees) 2:03 1:48 1:00 78 REC=117"/120" =98% RQD=111"/120" =93% 1:08 79 :57 80 :48 81 82 1:15 83 :50 84 :53 85 1:58 86 1:12 87 1:14 88 REC=120"/120" =100% RQD=117"/120" =98% 1:04 89 90 1:15 91 1:09 92 Light to dark gray micaceous SANDSTONE, some silt, iron staining, coal stringers, medium grained, moderately hard and strong, slightly weathered, close vertical fracturing (10-30 1:06 93 degrees) 1:08 94



Log of Boring BH69E Sheet 5 of 16 ENGINEERING & ENVIRONMENTAL SERVICES Project Project No. East 1428154.996 Beazer/INDSPEC Properties 2568412 Location Elevation and Datum North Petrolia, Pennsylvania 1422.12 NAVD 1988 622359.92 Sample Data Coring min/ Remarks Depth Scale Penetr. resist BL/6in Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Reading (ppm) 6 :50 96 :50 97 98 :48 REC=113"/120" =94% RQD=106"/120" =88% :48 99 1:00 1:30 Core bit binding, slowed rotation speed. 1:05 - 102 1:01 103 1:31 104 :50 - 105 106 :42 :45 107 1:02 108 REC=118"/120" =98% RQD=94"/120" =78% :53 109 1:01 Minor binding. 1:12 :41 112 1:35 113 2:15 - 114 115 No return water, minor bit binding, drillers added 2 gallons of drill mud, slow to :45 116 REC=99"/120" =83% moderate rotation speed. RQD=21"/120" =18% 2:15 1:58 118 1:30 119



Sheet Log of Boring BH69E of 6 16 ENGINEERING & ENVIRONMENTAL SERVICES Project No. East 2568412 Beazer/INDSPEC Properties 1428154.996 Location Elevation and Datum North Petrolia, Pennsylvania 1422.12 NAVD 1988 622359.92 Sample Data Coring min/ f Remarks Depth Scale Number Recov. (in) Penetr. resist BL/6in Sample Description Type (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Reading (ppm) 1:26 121 REC=99"/120" =83% RQD=21"/120" =18% :56 122 :48 123 1:08 124 Q:DATA42568401/DATA FROM PHILLY/OFFICE DATA/GINT LOGS\INDSPEC BORING LOGS.GPJ ... 11/2/2009 3:10:13 PM ... Report. Log - LANGAN ...Template LANGAN. GDT 1:28 Greenish gray SILTSTONE, turbites, very fine grained, low to moderately hard, weak, few fractures 126 1:41 127 128 1:40 RQD=65"/120" =54% 1:32 129 REC=97"/120" =81% **NX CORE BARRE** 1:19 - 130 1:16 131 132 2:17 1:36 134 1:37 - 135 1:40 136 1:03 137 1:46 138 REC=117"/120" =98% RQD=117"/120" =98% 1:34 139 1:22 1:15 1:03 143 1:07



Log of Boring BH69E Sheet 7 of 16 **ENGINEERING & ENVIRONMENTAL SERVICES** Project No. East Project Beazer/INDSPEC Properties 2568412 1428154.996 Location Elevation and Datum North Petrolia, Pennsylvania 1422.12 NAVD 1988 622359.92 Sample Data MATERIAL SYMBOL Coring min/ Remarks Depth Scale Penetr. resist BL/6in Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Reading (ppm) Heavy grinding/chattering of 4 drill rods, slowed rotation speed, added 2 gallons of drill 1:52 146 3:00 3:03 148 3:07 149 REC=95"/120" =79% RQD=82"/120" =68% 2:07 150 Light gray CLAYSTONE, very fine grained, friable, weak, deeply weathered, crushed fractures 2:02 2:07 152 153 1:32 :53 154 Light to dark gray tan SANDSTONE, carbon stringers, 1:08 - 155 micaceous, medium to coarse grained, low to moderately hard, No return water, drill mud and weak to moderately strong, slight weathering, little fracturing (5 water was added at top of - 25 degrees) casing. 156 :29 :31 157 :15 158 :25 159 REC=92"/120" =77% RQD=90"/120" =75% :28 160 :48 161 :52 162 :40 163 164 165 Moderate binding/chattering of drill rods. :29 166 REC=91"/120" =76% RQD=90"/120" =75% :24 167 :26 168 169 :22



Log of Boring BH69E Sheet of 8 16 **ENGINEERING & ENVIRONMENTAL SERVICES** Project Project No. East Beazer/INDSPEC Properties 2568412 1428154.996 Location Elevation and Datum North Petrolia, Pennsylvania 1422.12 NAVD 1988 622359.92 Sample Data Coring min/ Remarks Depth Scale Penetr. resist BL/6in Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Reading (ppm) :27 REC=91"/120" =76% RQD=90"/120" =75% :24 172 :20 173 :30 Template LANGAN.GDT Dark gray to black SILTSTONE, very fine grained, smooth, low hardness, weak, little fracturing :39 Continued no water return, added drill mud and water at top of casing. :51 176 :31 Gray SANDSTONE, micaceous, coal stringers, medium to 178 :22 course grained, moderately hard and strong, massive fractures (0-5 degrees) :27 179 REC=95"/120" =79% RQD=95"/120" =79% :41 180 Heavy to moderate binding of drill rods. :387 181 :33 182 :33 183 :55 184 1:05 - 185 1:07 186 :58 187 1:11 188 REC=119"/120" =99% RQD=115"/120" =96% 189 1:13 1:09 190 1:15 1:18 192 1:21 193 :37 194 Dark black COAL, friable, crushed fractures



Log of Boring BH69E Sheet of 16 9 **ENGINEERING & ENVIRONMENTAL SERVICES** Project Project No. East Beazer/INDSPEC Properties 2568412 1428154.996 Location Elevation and Datum North Petrolia, Pennsylvania 1422.12 NAVD 1988 622359.92 Sample Data . Coring min/ Remarks Depth Scale Penetr. resist BL/6in Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Reading (ppm) 9 196 :36 197 :38 198 REC=119"/120" =99% RQD=118"/120" =98% :34 199 :31 200 Continued no water return, slowed rotation speed, added 3 gallon of drill mud, heaving :35 201 binding/chattering of drill rods. :35 202 203 :37 :38 204 :52 205 Light gray SANDSTONE, micaceous, abundant coal stringers, very fine grained, moderately hard and strong, little to no natural fractures 1:16 206 1:50 207 1:13 208 REC=120"/120" =100% RQD=120"/120" =100% 1:02 209 1:00 - 210 1:20 211 Smooth coring. 1:00 - 212 1:08 213 :52 214 1:30 215 :54 216 REC=120"/120" =100% RQD=119"/120" =99% 1:39 217 - 218 1:45 219 Very choppy coring.



Log of Boring BH69E Sheet 10 of 16 Project No. East 2568412 Beazer/INDSPEC Properties 1428154.996 Location Elevation and Datum North 1422.12 NAVD 1988 622359.92 Petrolia, Pennsylvania Sample Data 1:45 Coring min/ f Remarks Depth Number Penetr. resist BL/6in Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Scale Reading (ppm) 1:30 221 REC=120"/120" =100% RQD=119"/120" =99% :49 222 :44 223 1:45 224 _ANGAN ...Template LANGAN.GD 1:31 226 Increased rotation speed, Light gray marine SILTSTONE, abundant coal stringers, very slight water return. fine grained, low to moderately hard, weak to moderately strong, intensely fractured 1:56 227 1:01 228 Dark black COAL, friable, crushed fractures REC=115"/120" =96% RQD=111"/120" =93% :51 229 1:02 230 :57 231 1:05 232 :51 233 NDATA FROM PHILLY/OFFICE DATA/GINT LOGS/INDSPEC BORING LOGS. 1:26 234 Light gray marine SILTSTONE, abundant coal stringers, very fine grained, low to moderately hard, weak to moderately strong, intensely fractured 1:27 235 1:37 236 237 238 REC=119"/120" =99% RQD=119"/120" =99% 239 Light to dark gray SANDSTONE, micaceous, some coal stringers, fine grained, moderately hard and strong, little to no natural fractures 242 243



Log of Boring BH69E Sheet of 11 16 **ENGINEERING & ENVIRONMENTAL SERVICES** Project No. East Beazer/INDSPEC Properties 2568412 1428154.996 Location Elevation and Datum North Petrolia, Pennsylvania 1422.12 NAVD 1988 622359.92 Sample Data . Coring min/ Remarks Depth Scale Penetr. resist BL/6in Number Recov. (in) Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Reading (ppm) 24 No return water, smooth coring/steady rotation speed. 246 1:09 247 1:04 248 REC=118"/120" =98% RQD=118"/120" =98% 1:03 249 1:08 250 :55 251 1:05 252 Drill rods binding, added 0.5 Q:DATA4/268401/DATA FROM PHILLY/OFFICE DATA/GINT LOGS\INDSPEC BORING LOGS.GPJ ... 11/2/2009 3:10:15 PM ... Report. Log - LANGAN .. gallon drill mud. Light gray SILTSTONE, very smooth/fine grained, friable to low 2:30 253 hardness, weak to moderately strong, intense fracturing (glass like fracture face) 2:10 254 1:38 255 256 1:31 1:38 257 Increased rotation speed. 1:30 258 REC=118"/120" =98% RQD=117"/120" =98% 1:00 259 1:06 260 261 1:20 1:33 262 Continued smooth coring. 1:32 263 1:31 264 2:08 265 2:14 266 REC=116"/120" =97% RQD=104"/120" =87% 267 268 1:41 269 1:58



Log of Boring BH69E Sheet 12 of 16 **ENGINEERING & ENVIRONMENTAL SERVICES** Project No. East Project Beazer/INDSPEC Properties 2568412 1428154.996 Location Elevation and Datum North Petrolia, Pennsylvania 1422.12 NAVD 1988 622359.92 Sample Data Coring min/ f MATERIAL SYMBOL Remarks Depth Scale Number Penetr. resist BL/6in Sample Description Type (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Reading (ppm) 1:34 271 REC=116"/120" =97% RQD=104"/120" =87% 1:20 272 1:50 273 1:26 274 nplate LANGAN.GDT 1:03 Light gray CLAYSTONE, some siltstone bands, coal stringers, very fine grained, friable, weak, deeply weathered, little 1:22 276 fracturing 1:26 278 2:04 REC=118"/120" =98% RQD=116"/120" =97% 1:40 279 **NX CORE BARRE** 1:18 280 Q:DATA4\2568401\DATA FROM PHILLY\OFFICE DATA\GINT LOGS\INDSPEC BORING LOGS.GPJ ... 11/2/2009 3:10:15 PM :54 281 Dark black SILTSTONE, high in carbon, very fine grained, ***************** friable, little fracturing 1:08 282 1:22 283 1:30 284 1:34 285 286 1:34 2:00 287 2:18 288 REC=118"/120" =98% RQD=102"/120" =85% 3:00 289 1:50 290 29 1:57 291 1:35 292 Heavy binding of core bit, slowed rotation speed, added Light gray SILTSTONE, very fine grained, carbon stringers, low 0.5 gallon drill mud. 1:52 293 hardness, weak, little fracturing 1:58 294

295



Log of Boring BH69E Sheet of 13 16 **ENGINEERING & ENVIRONMENTAL SERVICES** Project Project No. East 2568412 1428154.996 Beazer/INDSPEC Properties Location Elevation and Datum North Petrolia, Pennsylvania 1422.12 NAVD 1988 622359.92 Sample Data Coring min/ Remarks Depth Scale Number Penetr. resist BL/6in Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Reading (ppm) 29 Performed HCL test, positive reaction for Vanport Limestone Light gray LIMESTONE, highly fossiliferous (shells/brachipods), medium grained, moderately hard and strong, closely fractured (0-20 degrees) 1:28 296 at 295.5 feet below ground surface. 2:00 297 1:25 298 REC=107"/120" =89% 1:00 299 RQD=46"/120" =38% 300 Minor binding of core bit throughout the Vanport Limestone. 1:10 301 1:00 302 303 1:05 1:14 304 1:30 305 306 1:29 1:11 307 1:19 308 REC=118"/120" =98% RQD=115"/120" =96% 1:35 309 1:40 310 1:13 311 1:01 312 1:02 313 1:17 314 1:34 315 1:35 316 REC=116"/120" =97% RQD=115"/120" =96% 1:47 317 1:16 - 318 1:09 319



Log of Boring BH69E Sheet 14 of 16 Project No. East Beazer/INDSPEC Properties 2568412 1428154.996 Location Elevation and Datum North Petrolia, Pennsylvania 1422.12 NAVD 1988 622359.92 Sample Data 1:18 Coring min/ f Remarks Depth Scale Penetr. resist BL/6in Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Reading (ppm) Performed HCL test, no reaction. 1:26 321 REC=116"/120" =97% RQD=115"/120" =96% 1:28 322 1:30 323 324 1:34 325 1:12 326 1:14 327 HCL tests confirmed end of Dark gray to black marine SHALE, highly fossiliferous Vanport Limestone at 327.5 (shells/brachipods), very smooth, trace claystone laminations, fine grained, moderately hard and strong, little fractures 328 1:16 feet below ground surface. Smooth and steady coring. REC=119"/120" =99% RQD=118"/120" =98% 1:14 329 330 1:40 11/2/2009 3:10:16 PM 2:18 331 1:36 332 1:42 333 LOGS\INDSPEC BORING LOGS.GPJ 1:31 334 2:08 335 :58 336 1:28 337 44/2568401/DATA FROM PHILLY/OFFICE DATA/GINT 1:23 338 REC=118"/120" =98% RQD=114"/120" =95% 339 1:118 34 1:30 1:32 342 Same as above except 1 inch coal seems approximately 2-6 inches apart :58 343 1:04 344 Dark black COAL, with calcite lenses, friable, crushed fractures



Log of Boring BH69E Sheet of 15 16 **ENGINEERING & ENVIRONMENTAL SERVICES** Project Project No. East Beazer/INDSPEC Properties 2568412 1428154.996 Location Elevation and Datum North Petrolia, Pennsylvania 1422.12 NAVD 1988 622359.92 Sample Data 1:02 Coring min/ f Remarks Depth Scale Number Penetr. resist BL/6in Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Reading (ppm) 34 :52 346 1:36 347 Light gray CLAYSTONE, some coal stringers, very fine grained, 1:38 348 friable, weak, little fracturing REC=119"/120" =99% RQD=118"/120" =98% 349 1:40 1:41 2:00 351 1:37 352 353 1:25 1:38 354 Dark gray to black SANDSTONE, thin clay layers, fine grained, moderately hard and strong, fresh/no evidence of weathering or fracturing 1:42 355 356 1:28 1:21 357 1:34 358 REC=103"/120" =86% 1:16 359 RQD=82"/120" =68% 1:27 360 361 1:29 362 1:32 1:46 363 364 Drill rods binding, slowed rotation speed. 1:44 365 Set top of 4 inch well screen. 1:50 366 REC=111"/120" =93% RQD=105"/120" =88% 1:38 367 368 1:47 369 1:44



Log of Boring BH69E Sheet of 16 16 Project Project No. East 1428154.996 Beazer/INDSPEC Properties 2568412 Location Elevation and Datum North Petrolia, Pennsylvania 1422.12 NAVD 1988 622359.92 Sample Data . Coring min/ Remarks Depth Scale PID Reading (ppm) Recov. (in) Penetr. resist BL/6in Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Loss lift due to clay being dissolved. 371 REC=111"/120" =93% RQD=105"/120" =88% 372 373 374 375 376 REC=79"/60" =132% RQD=63"/60" =105% 377 378 379 380 Set bottom of 4 inch well Q:DATA42568401/DATA FROM PHILLY/OFFICE DATA/GINT LOGS\INDSPEC BORING LOGS.GPJ ... 11/2/2009 3:10:16 PM . End of Boring @ 380.5 ft Terminated borehole at 380.5 381 feet below ground surface. 382 383 384 385 386 387 388 389 390 391 392 393 394



ENGINEERING & ENVIRONMENTAL SERVICES	Log	of Boring	BH70D	Sheet	1 of	10		
Project		Project No.			East			
Beazer/INDSPEC Properties Location		Elevation and Datum	2568412		1427346.646 North			
		Elevation and Datum	1315.17 NAVD 1			622740.12		
Petrolia, Pennsylvania Drilling Agency		Date Started		1988				
Pennsylvania Drilling Company			6/23/04	6/25/04				
Drilling Equipment		Completion Depth		Rock Depth				
Acker Hybrid Drill Rig/CMI Air Rotary F Size and Type of Bit	Rig		215 ft Disturbed	Undisturbed	9 ft Core			
10" OD Hollow Stem Auger/6" OD Roller Bit		Number of Samples	E'mi		N/A			
Casing Diameter (in) 8" Steel/4" PVC Riser	Casing Depth (ft) 13'/197'	Water Level (ft.)	First 	Completion 5	24 HR. 52 T	129		
Casing Hammer N/A Weight (lbs)	I/A Drop (in) N/A	Drilling Foreman	· -					
Sampler N/A	'	Inspecting Engineer	arl Dye					
Sampler Hammer Weight (lbs)	I/A Drop (in) N/A	1 '	Dennis Webster					
	1071		Sample Data	Domonico				
Sample Description	Depth square	Recov. (in) Penetr. resist BL/6in BL/6in	D ding (Drilling	Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)				
		0	a a a d (bb	,				
Black organic TOPSOIL, roots and leaf matter	<u> </u>		rotary o	stem auger drilling was p	and air erformed.			
Strong reddish brown silty CLAY, trace browni	ish red sandstone	<u> </u>		See we	ell construction	on		
fragements, mixed amounts of subangular gra	evel (dry to moist)			summa	ary MW-70D d description	for a		
		2 - 2		\ installe	d well.			
		AUG			n augering/st n speed.	eady		
				Totation	эрсси.			
		- 4 -						
		5						
		6 -						
		7 - 2						
		[0] 0 [
		F 8 - 1 P						
Reddish brown SANDSTONE, iron staining, m	9 -			auger speed ed sandstone				
medium grained, friable, weak, deep weatherin intensely fractured	10		liacture	a sariusione	.			

		- 11 -						
		E = 1						
		12 -						
		13 - 8 9 - 13 - 8				10.5		
					ate auger at sal/set bottor			
		- 14 - <u>C</u>			asing/began	air rotary		
		4		drilling.				
Light gray SANDSTONE, trace mica, thin band	ds of silty clay,	15						
medium grained, moderately hard and weak, n	moderately weathered	,		_				
	ota da castati d	- 16 ON]	Dry cut	tting return.			
****See Boring Log BH70E for detailed litholog coring activities****	gic descriptions from	[₁₇] []						
		18 -						
		F 40 =						
		<u> </u>			mooth and ea			
		 			ering due to s	severely		



BH70D Log of Boring Sheet 2 of 10 Project No. East Beazer/INDSPEC Properties 1427346.646 2568412 Elevation and Datum North Location Petrolia, Pennsylvania 1315.17 NAVD 1988 622740.12 Sample Data Remarks Depth Scale PID Reading (ppm) Recov. (in)
Penetr. resist
BL/6in Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) 20 21 22 23 24 25 Light gray SANDSTONE, trace mica, thin bands of silty clay, solution cavities, medium grained, moderately hard and weak, moderately weathered, closely fractured (0-20 degrees) 26 27 Continued dry cutting return. 28 29 30 32 35 36 37 38 39



Log of Boring BH70D Sheet 3 of 10 Project No. East Beazer/INDSPEC Properties 2568412 1427346.646 Location Elevation and Datum North Petrolia, Pennsylvania 1315.17 NAVD 1988 622740.12 Sample Data Remarks Depth Scale Penetr. resist BL/6in Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Reading (ppm) 46 48 49 Light brown to gray CLAYSTONE, some fine silt, bands of pyritic sandstone, friable, friable to weak, slightly weathered, intensely fractured 52 53 55 Light gray micaceous SANDSTONE, medium grained, hard, ∇ moderately strong, slightly weathered, moderate fracturing 58 Moist cutting return dark gray to brown. 59 60 61 62 63 Saturated cutting return. 64 66 Slight sheen and petroleum odor detected. 67 68 Good water return. 69



Log of Boring BH70D Sheet of 10 4 Project No. East Beazer/INDSPEC Properties 2568412 1427346.646 Location Elevation and Datum North Petrolia, Pennsylvania 1315.17 NAVD 1988 622740.12 Sample Data Remarks Depth Scale Number Penetr. resist BL/6in Sample Description Type (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Reading (ppm) 72 73 Dark gray SILTSTONE, fine grained, low hardness, weak, moderate 8401/DATA FROM PHILLY/OFFICE DATA/GINT LOGS/INDSPEC BORING LOGS.GPJ ... 1/27/2010 3:06:08 PM ... Report. Log - LANGAN ...Template LANGAN.GDT weathering and fracturing 76 Slight sheen and petroleum odor detected. 78 Good water and cutting return. 79 80 82 83 Brown to gray return water. 84 85 86 Slight sheen and petroleum odor detected. 87 88 89 Gray water/cutting return. 91 92 Light to dark gray micaceous SANDSTONE, some silt, iron staining, coal stringers, medium grained, moderately hard and strong 93 94



Log of Boring BH70D Sheet 5 of 10 **ENGINEERING & ENVIRONMENTAL SERVICES** Project No. East Beazer/INDSPEC Properties 2568412 1427346.646 Location Elevation and Datum North Petrolia, Pennsylvania 1315.17 NAVD 1988 622740.12 Sample Data Remarks Depth Scale Number Penetr. resist BL/6in Recov. (in) Sample Description Type (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Reading (ppm) 95 96 97 Gray to black water return, Dark black COAL, moderately hard and weak very smooth/quick hammering. 98 99 AIRROTAR Q:DATA42568401/DATA FROM PHILLY/OFFICE DATA/GINT LOGS\INDSPEC BORING LOGS. GPJ ... 1/27/2010 3:06:09 PM ... Report. Log - LANGAN ...Template LANGAN, GDT Dark gray SILTSTONE, large amounts of claystone, fine grained, low hardness, weak 102 103 104 105 106 Increased amounts of water return. 107 108 109 110 112 113 114 116 118 119



BH70D Log of Boring Sheet 6 of 10 Project No. East Beazer/INDSPEC Properties 2568412 1427346.646 Location Elevation and Datum North Petrolia, Pennsylvania 1315.17 NAVD 1988 622740.12 Sample Data MATERIAL SYMBOL Remarks Depth Scale Number Penetr. resist BL/6in Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Reading (ppm) 120 121 122 Light to dark gray SANDSTONE, mica flakes, pyrite veins, fine to medium grained, moderately hard and strong, moderately fractured 123 124 125 126 127 Gray to brown cutting/water return. 128 129 130 131 132 133 134 Same as above except increased amounts of reddish brown and gray fine sands 135 136 Continued smooth and quick hammering. 137 138 139 Dark black COAL seem Slowed speed of hammer due to slowed air return. 143



BH70D Log of Boring Sheet 7 of 10 Project No. East Beazer/INDSPEC Properties 2568412 1427346.646 Location Elevation and Datum North Petrolia, Pennsylvania 1315.17 NAVD 1988 622740.12 Sample Data Remarks Depth Scale Number Recov. (in) Penetr. resist BL/6in Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Reading (ppm) 146 148 149 150 Light to dark gray SANDSTONE, mica flakes, pyrite veins, fine to Increased hammer speed. medium grained, moderately hard and strong, moderately fractured 152 153 154 155 156 Increase in water and cutting return. 157 158 159 160 161 Dark black COAL, pyrite veins, low harness, weak, crushed fracturing 162 Light gray then fading to black return water. 163 164 165 166 167 Dark gray CLAYSTONE, trace marcasite and pyrite, very fine grained, friable, weak 168 Less amounts of water return, dark gray to brown. 169



BH70D Log of Boring Sheet 8 of 10 Project Project No. East 1427346.646 Beazer/INDSPEC Properties 2568412 Elevation and Datum North Location Petrolia, Pennsylvania 1315.17 NAVD 1988 622740.12 Sample Data Remarks Depth Scale PID Reading (ppm) Recov. (in)
Penetr. resist
BL/6in Number Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) 172 173 175 176 178 Light to dark gray marine SHALE, very smooth, some claystone fragements, fine grained, moderately hard and strong 179 180 1/27/2010 3:06:09 PM .. 181 182 183 Q:\DATA4\2568401\DATA FROM PHILLY\OFFICE DATA\GINT LOGS\INDSPEC BORING LOGS.GPJ 184 185 186 187 188 189 Chattering and binding of hammer, loosing air return. 191 192 193 194



Log of Boring BH70D Sheet of 10 9 Project No. East Beazer/INDSPEC Properties 2568412 1427346.646 Location Elevation and Datum North Petrolia, Pennsylvania 1315.17 NAVD 1988 622740.12 Sample Data Remarks Depth Scale Number Recov. (in)
Penetr. resist Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Reading (ppm) 195 Increased hammer speed due to more competent rock. 196 Light gray LIMESTONE, highly fossiliferous (shells/brachipods), 197 medium grained, moderately hard and strong, moderately fractured Set top of 4 inch well screen. 198 199 200 Increased amounts of water return, light to dark gray. 201 202 203 204 205 206 207 208 Slowed speed of hammer due to binding and chattering. 209 210 211 212 Set bottom of 4 inch well screen. Q:\DATA4\2568401\DATA FROM PHILLY\OFFICE DATA\GINT 213 214 Light to dark gray marine SHALE, very smooth, some claystone fragements, fine grained, moderately hard and strong Terminated air rotary drilling at End of Boring @ 215 ft 215 feet below ground surface on 6/24/04. 216 217 218 219



BH70D Log of Boring Sheet 10 of 10 Project Project No. East Beazer/INDSPEC Properties 1427346.646 2568412 Location Elevation and Datum North Petrolia, Pennsylvania 1315.17 NAVD 1988 622740.12 Sample Data Remarks Depth Scale Number Recov. (in)
Penetr. resist PID Reading (ppm) Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) 220 221 222 223 224 Q:DATA42568401/DATA FROM PHILLY/OFFICE DATA/GINT LOGS\INDSPEC BORING LOGS.GPJ ... 1/27/2010 3:06:10 PM ... Report. Log - LANGAN ...Template LANGAN.GDT 225 226 227 228 229 230 231 232 233 234 235 236 237 238 239 240 241 242 243 244



	ENGINEERING & ENVIRONMENTAL SERVICES	Log		Boring			BH	70E			Sheet	1	of	12
Project	•		Pro	Project No.						East	1407	2/2 100		
Beazer/INDSPEC Properties Location		Ele	2568412 Elevation and Datum								North	142/	343.122	
Petrolia, Pennsylvania		_	1- C' :			131	5.31 N	AVD 19				6227	750.103	
Drilling Agency		Da	Date Started Date Finished 6/10/04 6/24/04									124104		
Pennsylvania Drilling Drilling Equipment		Co	6/10/04 Completion Depth						Rock Depth					
Acker Hybrid Drill Rig/CMI Air Rotary Rig Size and Type of Bit 10" OD Hollow Stem Auger/2" OD NX Core/6" OD						269 ft			Undisturbed			10.1 ft Core		
	Roller Bit		Nu	Number of Samples			Disturbed 6		6	Undisturbed N/A		N/A	N/A	
Casing	sing Diameter (in) Casing Depth (ft) 8" Steel/4" PVC Riser 14.0'/252'		Wa	Water Level (ft.)			First 60		60	Com	Completion ▼ 147.7		24 HR. V 14	9.7
Casing	Casing Hammer N/A Weight (lbs) N/A Drop (in) N/A			Drilling Foreman										
Sample	2" x 2.0' OD Split Spoon	<u>'</u>	Ins	Earl Dye Inspecting Engineer										
Sample	Sampler Hammer N/A Weight (lbs) 140 lbs Drop (in) 30"			Dennis Webster/Jason Hanna										
SIAL OL			nin/ ft									Remarks		
MATERIAL SYMBOL	Sample Description		Coring min/ ft	Scale	Number	Туре	Type Recov. (in) Penetr. resist BL/6in		Readin	PID Reading (Dril (ppm) Fluid L		rilling Fluid, Depth of Casing, Loss, Drilling Resistance, etc.)		
<u>x\1/y</u> <u>x\1/y</u> .	Black organic TOPSOIL, roots and leaf matter (dry)	ŏ	_ 0 -				1	0		Split	spoon s	ampling,	hollow
17. 7.14. 7	<u> </u>			- 1 -		SS	8	1	0		stem auger, NX rock coring and air rotary drilling was			
Light brown silty CLAY, trace brownish red sandstone fragements, mixed amounts of subangular gravel (moist)			-	₫ `	S	~	3	0		perfor		struction		
		. (,		_ 2 -	+			4	0		sumn	nary M\	N-70E for	
				∄	SS	19	4	0		detailed description of the installed well.				
				_ 3 - -	7	S	-	6	0					
	Strong reddish brown silty CLAY, trace brownish red sandstone			_ 4 -	}_			49 20	0 5.1		Encountered highly mot			ottled
	fragements, mixed amounts of subangular grave			- - -	=			26	3.1		soils	from 4.3	3 to 7.5 fe	et below
				5 - m SS		SS	12	9	0		ground surface indicating possible perched water			
				- - 6 -	1_			12	2.1 0		condi	tions.		
				-	=		1	5	0					
				_ 7 -	4	SS	12	12 13	0					
				- - 8 -	1			15	0					
	Strong reddish brown silty CLAY, increased amounts of reddish brown sandstone, mica, iron staining (dry)			_	=			26	0					
	(a))			<u> </u>	2	SS		18 9	0					
				- 10	7			8	0					
	Reddish brown SANDSTONE, iron staining, micaceous, fine to medium grained, friable, weak, deep weathering, intensely fractured (0-20 percent)		1	<u> </u>	∃			5	4.3 3.3			hered b		
				11 -	၂ ဖ	SS	24	3 2	3.3 0		encountered		4.	
					=			4	0					
				_ 12 - -	=			6	0					
				13		RSS	9	21	0		Enon	untorod	anlit ana	n .
Light was CANDOTONE trace raise this bands of				-	- B			3	ŭ		refus		split spoo	ווכ
				<u> </u>	#	₹							hollow st	
		of oilby alay		<u>-</u> 15 -	=					Ļ	inch s	steel ca	sing/ bega	
weathered, closely fractured (0-20 degrees)			1:40	1:40		یا	%0	%6				Coring water re	eturn, rod	s were
				16 - 16 - 22 22 22 22 22 22 22 22 22 22 22 22 2			6=(%6E=					ed rotatio	
			1:41				REC=108"/120" =90%	/120				water return, light to prown.		
			1:11	17 — Ш :11 — — Ш ОО				=47".						
				_ 18 -	NXC	EC=	REC=108'/120' RQD=47"/120"							
			1:02	19										
					=									



BH70E Sheet Log of Boring 2 of 12 Project No. East Beazer/INDSPEC Properties 2568412 1427343.122 Location Elevation and Datum North 1315.31 NAVD 1988 622750.103 Petrolia, Pennsylvania Sample Data Coring min/ Remarks Depth Sample Description Penetr. resist BL/6in (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Scale Reading (ppm) 20 REC=108"/120" =90% :40 **=33%** 21 :39 RQD=47"/120" Same as above except slight color change from gray to reddish :22 orange, increased amounts of iron staining, thin bands of clay 23 Smooth coring, fast rotation :27 speed. 24 :29 25 :24 26 Smooth coring, drillers added 0.3 gallon of drill mud. :21 Light gray SANDSTONE, trace mica, thin bands of silty clay, REC=103.5"/120" =86% :18 solution cavities, medium grained, moderately hard and weak, RQD=68"/120" =57% moderately weathered, closely fractured (0-20 degrees) 28 :17 29 Slight chattering of drill rods, :20 slowed rotation speed. 30 :13 :24 32 Smoother coring, increased Same as above except increased amounts thin bands of clay :25 with close fracturing (0-5 degrees) rotation speed. 33 :25 34 :20 35 Loosing water return. :19 36 :20 37 Same as above except highly weathered with intense fracturing REC=114"/120" =95% :25 RQD=69"/120" =58% 38 :27 39 Light gray milky return water. :20 Brown to light gray SANDSTONE, less amounts of iron :19 staining, micaceous, medium grained, moderately hard and strong, slight weathering, little fracturing (0-5 degrees) :22 Continued smooth coring. :31 :32 :40



Log of Boring BH70E Sheet 3 of 12 **ENGINEERING & ENVIRONMENTAL SERVICES** Project No. East Project Beazer/INDSPEC Properties 1427343.122 2568412 Location Elevation and Datum North Petrolia, Pennsylvania 1315.31 NAVD 1988 622750.103 Sample Data Coring min/ Remarks Depth Scale Penetr. resist BL/6in Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Reading (ppm) :25 :31 :38 RQD=87.5"/120" =73% REC=118"/120" =98% :27 :31 :25 Chattering and grinding of drill Light brown CLAYSTONE, some fine silt, thin bands of pyritic rods, slowed rotation speed, :19 sandstone, friable, friable to weak, slightly weathered, intensely drillers added 0.3 gallon of drill fractured (0-20, 20-65 degrees) 52 :22 53 :20 :24 55 :22 56 Light gray micaceous SANDSTONE, thin bands of fine grained black sands, medium grained, hard, moderately strong, slightly weathered, moderate fracturing (0-5 degrees) :31 Smooth coring increased RQD=87.5"/120" =73% REC=117"/120" =98% :38 rotation speed. :42 59 :41 60 :43 :39 Drill rods binding, drillers :41 added 1 gallon drill mud. 63 :32 :30 REC=111"/120" =93% :22 RQD=97"/120" =81% Same as above except increasing bands of black silt :48 :42 68 :57 69 :59



Log of Boring BH70E Sheet 4 of 12 **ENGINEERING & ENVIRONMENTAL SERVICES** Project No. East Project Beazer/INDSPEC Properties 2568412 1427343.122 Location Elevation and Datum North Petrolia, Pennsylvania 1315.31 NAVD 1988 622750.103 Sample Data Coring min/ Remarks Depth Scale Penetr. resist BL/6in Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Reading (ppm) REC=111"/120" =93% 1:07 RQD=97"/120" =81% :22 Smoother coring/steady :31 rotation speed. 73 :21 ***** Dark gray SILTSTONE, carbon stringers, fine grained, low 3:10:48 PM ... Report: Log - LANGAN ...Template LANGAN.GDT :23 hardness, weak, moderate weathering and fracturing (0-2 degrees) 75 :27 :23 REC=119"/120" =99% RQD=101"/120" =84% :32 Same as above except increased amounts of fractures, very :42 soft, some thin bands of dark gray sandstone. 79 :23 80 :19 Light to dark gray micaceous SANDSTONE, some silt, iron :24 staining, coal stringers, medium grained, moderately hard and strong, slightly weathered, close vertical fractures (65-90 82 degrees) :34 83 :23 :26 85 :27 :19 RQD=108.5"/120" =90% REC=114"/120" =95% :29 88 Chattering of drill rods, drillers added 0.5 gallon drill mud. :42 89 :33 :17 Same as above except increased amounts of coal stringers, :28 friable to weak 92 :30 93 :40 :42 0



BH70E Sheet Log of Boring 5 of 12 Project No. East Beazer/INDSPEC Properties 2568412 1427343.122 Location Elevation and Datum North 1315.31 NAVD 1988 622750.103 Petrolia, Pennsylvania Sample Data MATERIAL SYMBOL Coring min/ Remarks Depth Number Penetr. resist BL/6in Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Scale Reading (ppm) 95 :41 Dark black COAL, moderately hard, weak, crushed fracturing 96 Black return water, very easy :47 97 :30 RQD=58.5"/120" =49% REC=116"/120" =97% 98 :22 99 Dark gray to black SILTSTONE, thin bands of coal, very fine LOGS\INDSPEC BORING LOGS.GPJ ... 11/2/2009 3:10:49 PM ... Report: Log - LANGAN ...Template LANGAN.GDT grained, low hardness, weak, moderately weathered :51 100 Choppy coring, slowed rotation speed, drillers added 0.2 gallon :52 drill mud. :51 102 Same as above except thin bands of clay :49 103 :37 104 :40 105 :22 106 Smooth coring/increased :37 rotation speed. REC=111"/120" =93% :42 RQD=90"/120" =75% 108 :48 109 :41 :38 Dark gray to black CLAYSTONE, some fine sands, very fine :32 grained, friable, closely fractured both vertical and inclined (0-90 degrees) 112 :41 113 :40 :50 115 Same as above except increasing bands of medium grained REC=115"/120" =96% :33 RQD=84"/120" =70% sand, mica flakes CORE BARRE 16 :29 Drill rods binding/slowed Same as above except increased bands of black to gray :51 rotation speed, drillers added medium grained sands approximately 3-6" apart, decreased 0.2 gallon drill mud. number of horizontal fractures 118 :52 :50



BH70E Sheet Log of Boring 6 of 12 Project No. East Project 1427343.122 Beazer/INDSPEC Properties 2568412 Location Elevation and Datum North 1315.31 NAVD 1988 622750.103 Petrolia, Pennsylvania Sample Data Coring min/ Remarks Depth Scale Sample Description Penetr. resist BL/6in (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Reading (ppm) Smooth drilling/steady rotation REC=115"/120" =96% :31 RQD=84"/120" =70% speed. Light to dark gray SANDSTONE, mica flakes, pyrite veins (1-3 inches thick), thin laminations of dark black fine sands, fine to medium grained, moderately hard and strong, moderately :29 fractured (0-15 degrees) :27 123 :31 :37 125 :27 126 :31 RQD=112"/120" =93% :37 REC=80"/120" =67% 128 :42 129 :43 :31 :27 :26 :40 Same as above except increased amounts of mica and pyrite :42 lenses approximately 1 inch thick, some light gray fine sands. 135 :48 136 :52 137 REC=119"/120" =99% RQD=111"/120" =93% :49 138 :55 139 1:01 Light to dark gray CLAYSTONE, trace fossils, very fine grained, :49 friable, weak, little fractures, (0-5 degrees) :40 :39 Gray SANDSTONE, medium to fine grained, moderately hard :42 and strong, moderately fractured (0-15 degrees) 4 :62



Log of Boring BH70E Sheet 7 of 12 Project Project No. East Beazer/INDSPEC Properties 2568412 1427343.122 Location Elevation and Datum North Petrolia, Pennsylvania 1315.31 NAVD 1988 622750.103 Sample Data Coring min/ Remarks Depth Scale Penetr. resist BL/6in Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Reading (ppm) 1:08 146 1:11 1:04 REC=115"/120" =96% RQD=90"/120" =75% :59 1:07 150 1:10 Dark black COAL seem :49 Gray SANDSTONE, fine grained, moderately hard and strong, moderately fractured (0-15 degrees) 152 :47 153 :42 154 :45 155 :48 156 :52 REC=116.5"/120" =97% :49 RQD=61"/120" =51% :55 159 1:01 160 :49 Dark black COAL, pyrite veins, low harness, weak, crushed :40 fracturing 162 :44 163 :39 164 :42 Dark gray CLAYSTONE, trace marcasite and pyrite, very fine REC=117.5"/120" =98% 1:02 RQD=64"/120" =53% grained, friable, weak, little fractures, (0-5 degrees) 1:07 167 Drill rods binding, slowed :59 rotation speed. 168 1:20 169 1:12



BH70E Sheet Log of Boring 8 of 12 **ENGINEERING & ENVIRONMENTAL SERVICES** Project No. East Project Beazer/INDSPEC Properties 2568412 1427343.122 Location Elevation and Datum North 1315.31 NAVD 1988 622750.103 Petrolia, Pennsylvania Sample Data Coring min/ Remarks Depth Penetr. resist BL/6in Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Scale Reading (ppm) REC=117.5"/120" =98% 1:48 =53% Performed HCL test, no Light bluish gray CLAYSTONE, trace marcasite and pyrite, very fine grained, friable, weak, little fractures, (0-5 degrees) 1:55 RQD=64"/120" reaction. 9 172 1:09 173 Same as above except thin bands of black medium grained 1:25 sands Smooth and fast coring. 1:14 175 Light to medium gray SHALE, trace thin laminations of fine 1:12 sands, fine grained, low hardness, moderately strong, little fracturing (0-5 percent) 176 1:13 RQD=58.9"/120" =49% :58 REC=118"/120" =98% 178 Light gray CLAYSTONE, trace coal fragements, very fine 1:20 grained, low hardness, friable, little fracturing (0-5 degrees) 179 1:15 180 Performed HCL test, no 1:17 reaction. 181 Gray to bluish gray SHALE, very fine grained, moderately hard, weak to moderately strong, moderately fractured 1:26 182 1:19 183 LOGS/INDSPEC BORING LOGS.GPJ 1:14 184 1:08 185 1:12 186 1:14 187 REC=120"/120" =100% RQD=116"/120" =97% :59 DATA4/2568401/DATA FROM PHILLY/OFFICE DATA/GINT 188 1:02 189 1:08 190 1:09 1:13 192 1:08 193 Dark gray marine SHALE, very smooth, trace claystone 1:00 laminations, fine grained, moderately hard and strong, little fractures 9 1:02



Sheet Log of Boring BH70E 9 of 12 **ENGINEERING & ENVIRONMENTAL SERVICES** Project Project No. East 1427343.122 Beazer/INDSPEC Properties 2568412 Location Elevation and Datum North Petrolia, Pennsylvania 1315.31 NAVD 1988 622750.103 Sample Data Coring min/ Remarks Depth Scale Penetr. resist BL/6in Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Reading (ppm) 195 1:35 196 Light gray LIMESTONE, highly fossiliferous (shells/brachipods), medium grained, moderately hard and strong, closely fractured Performed HCL text, positive 1:48 reaction for Vanport Limestone at 196 feet below ground (0-20 degrees) 197 surface. 1:39 REC=117"/120" =98% RQD=115"/120" =96% 198 1:32 199 1:29 200 1:30 201 1:27 202 1:27 203 1:29 204 1:31 205 1:34 206 1:32 207 REC=119"/120" =99% RQD=110"/120" =92% 1:30 208 1:24 209 1:26 210 1:34 End of Vanport Limestone. Dark gray to black marine SHALE, highly fossiliferous (shells/brachipods), very smooth, trace claystone laminations, 1:30 fine grained, moderately hard and strong, little fractures 212 1:36 Q:\DATA4\2568401\DATA FROM PHILLY\OFFICE DATA\GINT 213 1:38 214 1:31 215 Same as above except smoother, trace pyrite and mica veins, REC=119"/120" =99% RQD=115"/120" =96% 1:15 increased numbers of marine fossils 216 1:22 1:19 218 1:10 219 Continued smooth and fast 1:12



Log of Boring BH70E Sheet 10 of 12 Project No. East 1427343.122 Beazer/INDSPEC Properties 2568412 Location Elevation and Datum North Petrolia, Pennsylvania 1315.31 NAVD 1988 622750.103 Sample Data Coring min/ Remarks Depth Scale Penetr. resist BL/6in Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Reading (ppm) REC=119"/120" =99% 1:21 221 RQD=115"/120" 1:14 222 1:12 223 Same as above except evidence of coal stringers 1:10 224 LANGAN.GD 1:10 225 1:31 226 Light black COAL, moderately hard and strong, crushed to 1:30 intensely fractured 227 :53 REC=117"/120" =98% RQD=67"/120" =56% 228 Binding of drill rods, slowed 1:18 rotation speed, added 0.2 gallon drill mud. 229 1:19 230 1:00 231 Light gray CLAYSTONE, calcite veins, some shell fossils, very 1:01 fine grained, low hardness, friable, close vertical fractures 232 :50 233 :52 234 :30 235 :26 236 Same as above except thin bands of light gray to white medium Very smooth coring, increased :21 rotation speed. grained sands 237 REC=120"/120" =100% RQD=110"/120" =92% :37 238 :41 239 23 Light gray to black SANDSTONE, some thin bands of claystone :52 (4-8" thick), fine to medium grained, moderately hard and strong, little fracturing where claystone bands appear :46 :32 242 :26 243 :30 24 :28



Log of Boring BH70E Sheet of 11 12 Project No. East Beazer/INDSPEC Properties 2568412 1427343.122 Location Elevation and Datum North Petrolia, Pennsylvania 1315.31 NAVD 1988 622750.103 Sample Data Coring min/ Remarks Depth Scale Penetr. resist BL/6in Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Reading (ppm) :33 246 :48 :52 REC=116.5"/120" =97% RQD=114"/120" =95% 248 1:03 249 1:12 250 1:10 251 1:07 252 Set top of 4 inch well screen. Same as above except increased amounts of dark gray 1:03 claystone and mica 253 Light gray to black SANDSTONE, some thin bands of white fine grained sands, fine to medium grained, moderately hard and 1:14 strong, little fracturing 254 Slight chattering of drill rods, 1:01 slowed rotation speed for remainder of run. 255 1:11 256 1:07 REC=119"/120" =99% RQD=117"/120" =98% 1:02 258 :59 259 1:10 260 1:01 261 :52 262 :54 263 :55 264 :57 265 266 267 Set bottom of 4 inch well screen. 268 Terminate borhole at 269 feet End of Boring @ 269 ft below ground surface.



BH70E Log of Boring Sheet 12 of 12 Project Project No. East 1427343.122 Beazer/INDSPEC Properties 2568412 Location Elevation and Datum North Petrolia, Pennsylvania 1315.31 NAVD 1988 622750.103 Sample Data Coring min/ ft Remarks Depth Scale Number PID Reading (ppm) Recov. (in)
Penetr. resist
BL/6in Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) 271 272 26 273 274 Q:DATA42568401/DATA FROM PHILLY/OFFICE DATA/GINT LOGS\INDSPEC BORING LOGS.GPJ ... 11/2/2009 3:10:52 PM ... Report. Log - LANGAN ...Template LANGAN.GDT 275 276 277 278 279 280 281 282 283 284 285 286 287 288 289 290 291 292 293 294

-295



Log of Boring **SW-1** Sheet of 9 1 Project Project No. East Beazer/INDSPEC Properties 2568412 Location Elevation and Datum North NAVD 1988 Petrolia, Pennsylvania Drilling Agency Date Started Date Finished 7/20/04 7/20/04 Pennsylvania Drilling Drilling Equipment Completion Depth Rock Depth 199.5 ft Acker Hybrid Drill Rig NA Size and Type of Bit Disturbed Undisturbed Core Number of Samples NA N/A N/A Casing Diameter (in) Casing Depth (ft) First Completion 24 HR. Water Level (ft.) \mathbf{V} 8" Steel/4" PVC Riser -184.5 22.7 19.9 Drop (in) N/A Drilling Foreman Casing Hammer Weight (lbs) N/A N/A Earl Dye Sampler N/A Inspecting Engineer Drop (in) N/A Weight (lbs) Sampler Hammer N/A N/A Dennis Webster Sample Data MATERIAL SYMBOL Remarks Depth Number Recov. (in)
Penetr. resist Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Type Q:DATA42568401/DATA FROM PHILLY/OFFICE DATA/GINT LOGS\INDSPEC BORING LOGS. GPJ ... 11/2/2009 3:10:59 PM ... Report. Log - LANGAN ...Template LANGAN. GDT Scale 2 3 5 6 8 9 10 12 13 14 15 16 18 19



SW-1 Log of Boring Sheet 2 of 9 Project Project No. East Beazer/INDSPEC Properties 2568412 Location Elevation and Datum North Petrolia, Pennsylvania NAVD 1988 Sample Data Remarks Depth Scale Number Recov. (in)
Penetr. resist
BL/6in Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) 20 21 22 23 24 Q:DATA42568401/DATA FROM PHILLY/OFFICE DATA/GINT LOGS\INDSPEC BORING LOGS.GPJ ... 11/2/2009 3:11:00 PM ... Report. Log - LANGAN ...Template LANGAN.GDT 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 42 43



SW-1 Log of Boring Sheet 3 of 9 Project Project No. East Beazer/INDSPEC Properties 2568412 Location Elevation and Datum North Petrolia, Pennsylvania NAVD 1988 Sample Data Remarks Depth Scale Number Recov. (in)
Penetr. resist
BL/6in Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) 45 46 48 49 Q:DATA42568401/DATA FROM PHILLY/OFFICE DATA/GINT LOGS\INDSPEC BORING LOGS.GPJ ... 11/2/2009 3:11:00 PM ... Report. Log - LANGAN ...Template LANGAN.GDT 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69



SW-1 Log of Boring Sheet 4 of 9 Project Project No. East Beazer/INDSPEC Properties 2568412 Location Elevation and Datum North Petrolia, Pennsylvania NAVD 1988 Sample Data Remarks Depth Scale Number Recov. (in)
Penetr. resist
BL/6in Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) 70 71 72 73 Q:DATA42568401/DATA FROM PHILLY/OFFICE DATA/GINT LOGS\INDSPEC BORING LOGS.GPJ ... 11/2/2009 3:11:00 PM ... Report. Log - LANGAN ...Template LANGAN.GDT 75 76 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94

95



SW-1 Log of Boring Sheet 5 of 9 Project Project No. East Beazer/INDSPEC Properties 2568412 Location Elevation and Datum North Petrolia, Pennsylvania NAVD 1988 Sample Data Remarks Depth Scale Number Recov. (in)
Penetr. resist
BL/6in Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) 95 96 97 98 99 Q:DATA42568401/DATA FROM PHILLY/OFFICE DATA/GINT LOGS\INDSPEC BORING LOGS.GPJ ... 11/2/2009 3:11:01 PM ... Report. Log - LANGAN ...Template LANGAN.GDT 100 101 102 103 104 105 106 107 108 109 110 111 112 113 114 115 - 116 117 118 119



SW-1 Log of Boring Sheet 6 of 9 Project Project No. East Beazer/INDSPEC Properties 2568412 Location Elevation and Datum North Petrolia, Pennsylvania NAVD 1988 Sample Data Remarks Depth Scale Number Recov. (in)
Penetr. resist
BL/6in Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) 120 121 122 123 124 Q:DATA42568401/DATA FROM PHILLY/OFFICE DATA/GINT LOGS\INDSPEC BORING LOGS.GPJ ... 11/2/2009 3:11:01 PM ... Report. Log - LANGAN ...Template LANGAN.GDT 125 126 127 128 129 130 131 132 133 134 135 - 136 137 138 139 140 141 142 143 144



SW-1 Log of Boring Sheet 7 of 9 Project Project No. East Beazer/INDSPEC Properties 2568412 Location Elevation and Datum North Petrolia, Pennsylvania NAVD 1988 Sample Data Remarks Depth Scale Number Recov. (in)
Penetr. resist
BL/6in Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) 145 146 147 148 149 Q:DATA42568401/DATA FROM PHILLY/OFFICE DATA/GINT LOGS\INDSPEC BORING LOGS.GPJ ... 11/2/2009 3:11:01 PM ... Report. Log - LANGAN ...Template LANGAN.GDT 150 151 152 153 154 155 156 157 158 159 160 161 162 163 164 165 166 167 168 169

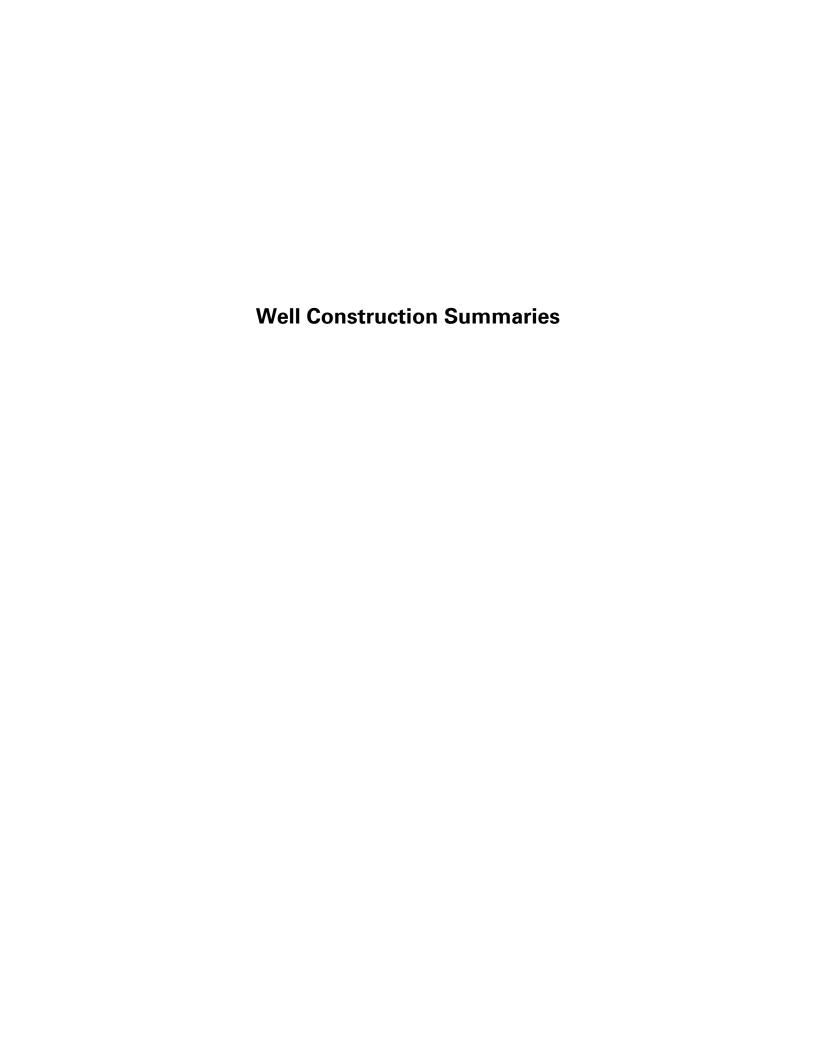


SW-1 Log of Boring Sheet 8 of 9 Project Project No. East Beazer/INDSPEC Properties 2568412 Location Elevation and Datum North Petrolia, Pennsylvania NAVD 1988 Sample Data Remarks Depth Scale Number Recov. (in)
Penetr. resist
BL/6in Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) 170 171 - 172 173 174 Q:DATA42568401/DATA FROM PHILLY/OFFICE DATA/GINT LOGS\INDSPEC BORING LOGS.GPJ ... 11/2/2009 3:11:02 PM ... Report. Log - LANGAN ...Template LANGAN.GDT 175 176 177 178 179 180 181 182 183 184 185 186 187 188 189 190 191 192 193 194

195



SW-1 Log of Boring Sheet 9 of 9 Project No. East Beazer/INDSPEC Properties 2568412 Location Elevation and Datum North Petrolia, Pennsylvania NAVD 1988 Sample Data Remarks Depth Scale Recov. (in)
Penetr. resist Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) 195 196 197 198 199 Q:DATA42568401/DATA FROM PHILLY/OFFICE DATA/GINT LOGS\INDSPEC BORING LOGS.GPJ ... 11/2/2009 3:11:02 PM ... Report. Log - LANGAN ...Template LANGAN.GDT End of Boring @ 199.5 ft 200 201 202 203 204 205 206 207 208 209 210 - 211 – 212 213 214 215 216 217 218 219





Well No. WP-01

Well Permit No. N/A

			VVCII I CITIIL INO. IN//		
Project		Project No.			
	Beazer/INDSPEC Properties		2568412		
Location		Elevation And Datum			
	Petrolia, Pennsylvania		1169.1 NAVD 1988		
Drilling Agency		Date Started	Date Finished		
	Bassett Environmental	8/8/2005	8/8/2005		
Drilling Equipmer	nt	Driller			
	Dolly Mounted Geoprobe 6620		Greg Landis		
Size And Type of	Bit	Inspector			
2" OD, 60" Macrocore Dennis Webster					
Method of Installa		annatan wall was them installed with	h 401		
The borehole was first sampled with 2" OD x 48" Long stainless steel macrocores. A 1" diameter well was then installed with 10' screen of 0.02 inch slot					

Mounted Geoprobe	6620	Diller	Greg La	andis
), 60" Macrocore		Inspec		oster
sampled with 2" OD x 48 er. A filter pack of No 2 sa	" Long stainless steel rand was placed to 3' bo	nacrocores. A 1" diameter vis with bentonite/grout to the	well was then installed with 10' screen of 0.02 in e surface.	ch slot
nt n 8/8/05 using a peristaltic	pump. A total of 3 gal	ons of water was removed.		
		Type of Backfill Material		
Diameter	r	Type of Seal Material Bentonite		
2"		Type of Filter Material No. 2 Filpro San	d	
Elevation	Depth	Well Detail	ls Soil Classification	De _l
Elevation	Depth 0' bgs		USCS Poorly-graded Sand	,
Elevation	Depth 3' bgs	—1" PVC Riser Bentonite/Gr	out	
Elevation	Depth 5.5' bgs	W 0 10 10	USCS Silty Sand	3
Elevation	Depth 15.5' bgs			
Elevation 1,153.60'	Depth 15.5' bgs		USCS Poorly-graded Sand	5.
10.0'	Slot Size 0.02-inch			
(Measured from the Top of Cas	sing)		USCS Low Plasticity Silty Clay	
DTW	Date	No. 2 Sand		
DTW	Date		USCS Low Plasticity Gravelly Clay	
DTW	Date	TO Sule		
DTW	Date			
DTW	Date		USCS Low Plasticity Gravelly Clay	
DTW	Date			
	Diameter 1-in Diameter 1-in Diameter 1-in Elevation Elevation Elevation Elevation Through The Top of Cas DTW DTW DTW DTW DTW DTW DTW DTW D	sampled with 2" OD x 48" Long stainless steel rer. A filter pack of No 2 sand was placed to 3' bg nt n 8/8/05 using a peristaltic pump. A total of 3 gall Diameter 1-inch Diameter 1-inch 2" Elevation Depth O' bgs Elevation Depth 3' bgs Elevation Depth 5.5' bgs Elevation Depth 15.5' bgs	sampled with 2" OD x 48" Long stainless steel macrocores. A 1" diameter ver. A filter pack of No 2 sand was placed to 3' bgs with bentonite/grout to the national state of the pack of No 2 sand was placed to 3' bgs with bentonite/grout to the national state of the pack of No 2 sand was placed to 3' bgs with bentonite/grout to the national state of the pack of No 2 sand was placed to 3' bgs with bentonite/grout to the national state of the pack of No 2 sand was placed to 3' bgs with bentonite/grout to the national state of the pack of No 2 sand was placed to 3' bgs with bentonite/grout to the national state of the pack of No 2 sand was placed to 3' bgs with bentonite/grout to the national state of the pack of No 2 sand was placed to 3' bgs with bentonite/grout to the national state of No 2 sand was placed to 3' bgs with bentonite/grout to the national state of No 2 sand was placed to 3' bgs with bentonite/grout to the national state of No 2 sand was placed to 3' bgs with bentonite/grout to the national state of No 2 sand was placed to 3' bgs with bentonite/grout to the national state of No 2 sand was placed to 3' bgs with bentonite/grout to the national state of No 2 sand was placed to 3' bgs with bentonite/grout to the national state of No 2 sand was placed to 3' bgs with bentonite/grout to the national state of No 2 sand was placed to 3' bgs with bentonite/grout to the national state of No 2 sand was placed to 3' bgs with bentonite/grout to the national state of No 2 sand was placed to 3' bgs with bentonite/grout to the national state of No 2 sand was placed to 3' bgs with bentonite/grout to the national state of No 2 sand was placed to 3' bgs with bentonite/grout to the national state of No 2 sand was placed to 3' bgs with bentonite/grout of No 2 sand was placed to 3' bgs with bentonite/grout of No 2 sand was placed to 3' bgs with bentonite/grout of No 2 sand was placed to 3' bgs with bentonite/grout of No 2 sand was placed to 3' bgs with bentonite/grout of No 2 sand was placed to 3' bgs with bentonite/grout o	Mounted Geoprobe 6620 7 Greg La 7 OD x 48" Long stainless steel macrocores. A 1" dameter well was then installed with 10" screen of 0.02 in the surface. The result of No 2 sand was placed to 3" bgs with bentonite/grout to the surface. Type of Backfill Material 1-inch Diameter 1-inch Diameter 1-inch Diameter 1-inch Diameter 1-inch Diameter 1-inch Diameter 1-inch Sentonite Type of Seal Material Proc of Filter Material No. 2 Filtpro Sand Elevation Depth 0" bgs Elevation Depth 5.5" bgs Elevation Depth 11.55" bgs Elevation Depth 11.153.60" 15.5" bgs Elevation Depth 11.155.60" 15.5" bgs Elevation Depth 11.155.60" 15.5" bgs Elevation Depth 11.155.60" Depth Diameter 11.100" Date DTW Date DTW Date DTW Date USCS Low Plasticity Gravelly Clay



Well No. WP-02

Well Permit No. N/A

						***************************************	nt No. N/A
Project	Beazer/INDSPEC Propert	ies		Project No.		256	8412
Location	Petrolia, Pennsylvania			Elevation An	d Datum	1168.7 NAVD	1988
Drilling Agency	Bassett Environmental			Date Started	8/8/2005	Date Finished 8/8/	2005
Drilling Equipmen	nt Dolly Mounted Geoprobe	6620		Driller		Greg L	andis
Size And Type of	Bit 2" OD, 60" Macrocore			Inspector		Dennis We	bster
Method of Installa The borehole PVC and 7' of	ation e was first sampled with 2" OD x 48" If PVC riser. A filter pack of No 2 sai					n 10' screen of 0.02 i	nch slot
1	revelopment reloped on 8/8/05 using a bailer. A to	otal of 5 well volumes v					
Type of Casing PVC	Diameter 1-inc	ch	Type of B	ackfill Material			
Type of Screen PVC	Diameter 1-inc	ch	1	eal Material Onite/Grout			
	er 2"			Iter Material 2 Filpro Sand			
Top of Seal Top of Filter Top of Screen	Elevation	Depth		Well Details	Soil Cla	assification	Depth (ft)
Top of Seal	Elevation	Depth 0' bgs			USCS Poorly-grad	ded Sand	
Top of Filter	Elevation	Depth 6' bgs	1	—PVC Riser			
	Elevation	Depth 6' bgs		—Bentonite/Grout	USCS Poorly-grad	ded Gravelly Sand	
Bottom of Filter	Elevation	Depth 16' bgs					
Bottom of Well	Elevation 1,152.70'	Depth 16' bgs			USCS Poorly-grad	ded Sand	6
Screen Length	10.0'	Slot Size 0.02-inch					
	GROUNDWATER ELEVATI (Measured from the Top of Casi	ONS (ft)	1	1	USCS Poorly-grad	ded Sand with Silt	
Elevation	DTW	Date		1	USCS Low Plastic	sity Silty Clay	
Elevation	DTW	Date			USUS LOW Flashe	only Olay	
Elevation	DTW	Date		No 2 Filpro Sand PVC Screen			
Elevation	DTW	Date			USCS Low Plastic	city Silty Clav	
Elevation	DTW	Date	1	4	Sandstone	,,,	
Bottom of Filter Bottom of Well Screen Length Elevation Elevation Elevation Elevation Elevation	DTW	Date					16



Well No. WP-04

Well Permit No. N/A

		Well Fellill No. N/P
Project	Project No.	
Beazer/INDSPEC Properties		2568412
Location	Elevation And Datum	
Petrolia, Pennsylvania		1167.1 NAVD 1988
Drilling Agency	Date Started	Date Finished
Bassett Environmental	9/7/2005	9/7/2005
Drilling Equipment	Driller	
Dolly Mounted Geoprobe 6620		Greg Landis
Size And Type of Bit	Inspector	
2" OD, 48" Long, Stainless Steel		Dennis Webster
Method of Installation	•	

Dolly Mounted Geoprobe 6620			Greg Landis			
Size And Type of Bit 2" OD, 48" Long, Stainless Steel				Inspector	Dennis We	bster
Method of Installation The borehole was sar	mpled first with 2" OD x 48	" long stainless steel m	acrocores. A 1" diar pentonite seal / cem	meter well was ent to 0.5' bgs	s then installed with 15' of 0.02 inch slot l s. A flushmount cover was then installed.	PVC and
Method of Well Developme Well was developed o	ent on 9/7/05 using a bailer. A t	otal of 5 well volumes v	were removed.			
Type of Casing PVC	Diameter 1-in		Type of Backfill Ma	aterial		
Type of Screen PVC	Diameter 1-in	•	Type of Seal Mater Bentonite	rial		
Borehole Diameter	2"		Type of Filter Mate			
Top of Casing	Elevation	Depth 0.3' bgs	Well De	tails	Soil Classification	Dept (ft)
Top of Seal	Elevation	Depth 0.3' bgs			Concrete	
Top of Filter	Elevation	Depth 1.8' bgs		onite/Cement C Riser	USCS Poorly-graded Gravel Concrete	1 2
Top of Screen	Elevation	Depth 3' bgs			USCS Poorly-graded Gravel	3
Bottom of Filter	Elevation	Depth 18' bgs			USCS Clayey Sand	5
Bottom of Well	Elevation 1,149.10'	Depth 18' bgs				6
Screen Length	15.0'	Slot Size 0.02-inch				- 7 - 8
GRO	UNDWATER ELEVAT (Measured from the Top of Cas	IONS (ft)			USCS Clayey Sand	9
Elevation	DTW 4.0'	Date 9/7/2005	T . H	Sand /C Screen		10
Elevation	DTW	Date				11
Elevation	DTW	Date			USCS Poorly-graded Sand	13
Elevation	DTW	Date			USCS Poorly-graded Sand with Clay	14
Elevation	DTW	Date				16
Elevation	DTW	Date				17



Well No. MW-71A

Well Permit No. N/A

			Well I ellill No. IV
Project		Project No.	
	Beazer/INDSPEC Properties		2568412
Location		Elevation And Datum	
	Petrolia, Pennsylvania		1166.71 NAVD 1988
Drilling Agency		Date Started	Date Finished
	Bassett Environmental	8/10/2005	8/10/2005
Drilling Equipme	ent	Driller	· · · · · · · · · · · · · · · · · · ·
	Track Mounted Geoprobe 6620		Greg Landis
Size And Type o	of Bit	Inspector	
	2" OD, 60" Macrocore		Dennis Webster

Method of Installation

Method of Well Development

ı 2 OI	2 OD, 60 Macrocore			Dennis Webster		
installed inside the au and 4 feet of PVC rise	igers and a filter pack was t	hen added as the aug	em augers to the top of weather ers were removed. The well cor a concrete pad was then installe	red bedrock. A 2-inch PVC monitoring wensisted of 15 feet of 0.020-inch slot PVC ved.	ell was well screen	
purged over 20 minut	on 8/11/05 by pumping with	n a submersible pump	at 1.0 gallons per minute until pu	urged water became clear. A total of 15 o	gallons was	
Type of Casing PVC	Diameter 2-ind	ch	Type of Backfill Material Portland Cement			
Type of Screen PVC	Diameter 2-inc	ch	Type of Seal Material Bentonite			
Borehole Diameter	4 1/4	1"	Type of Filter Material No. 2 Sand			
Top of Casing	Elevation 1,166.41'	Depth 0.3' bgs	Well Details	Soil Classification	Dep ^o	
Top of Seal	Elevation 1,164.21'	Depth 2.5' bgs	Flushmount	Asphalt	=	
Top of Filter	Elevation 1,163.21'	Depth 3.5' bgs	Grout 2" PVC Riser	USCS Poorly-graded Gravelly Sand	1 2	
Top of Screen	Elevation 1,162.71'	Depth 4' bgs			3	
Bottom of Filter	Elevation 1,147.71'	Depth 19' bgs		USCS High Plasticity Clay	5	
Bottom of Well	Elevation 1,147.71'	Depth 19' bgs			6	
Screen Length	15.0'	Slot Size 0.02-inch		USCS Low Plasticity Silty Clay	8	
	UNDWATER ELEVAT (Measured from the Top of Casi	ng) `´			9 10	
Elevation 1164.52'	DTW 1.89'	Date 8/11/2005	No. 2 Sand	USCS High Plasticity Clay	- 11	
Elevation 1164.61'	DTW 1.80'	Date 8/12/2005	2" PVC Screen		12	
Elevation 1163.51'	DTW 2.9'	Date 8/15/2005		USCS High Plasticity Clay	14	
Elevation 1163.46'	DTW 2.95'	Date 8/16/2005		USCS High Plasticity Clay	15	
Elevation	DTW	Date			16	
Elevation	DTW	Date			18	



Well No. MW-72A

Well Permit No. N/A

			Well I ellill No. IV
Project		Project No.	
	Beazer/INDSPEC Properties		2568412
Location		Elevation And Datum	
	Petrolia, Pennsylvania		1167.08 NAVD 1988
Drilling Agency		Date Started	Date Finished
	Bassett Environmental	8/10/2005	8/10/2005
Drilling Equipme	ent	Driller	
	Track Mounted Geoprobe 6620		Greg Landis
Size And Type of	of Bit	Inspector	
	2" OD, 60" Macrocore		Dennis Webster

Method of Installation

Method of Well Development

월 <u></u> 2 Ui	2 OD, 60 Macrocore			Dennis Webster		
installed inside the au and 5 feet of PVC rise remainder of the bore	igers and a filter pack was t er. A filter pack of No. 2 sai	hen added as the auge nd was placed in the b	ers were removed. The well co	ered bedrock. A 2-inch PVC monitoring we onsisted of 10 feet of 0.020-inch slot PVC vite seal was then placed from 2.0 to 3.75' lete pad was then installed.	vell screen	
Method of Well Developm Well was developed of purged over 20 minut Type of Casing	on 8/11/05 by pumping with	a submersible pump	at 1.0 gallons per minute until p	ourged water became clear. A total of 15 g	allons was	
Type of Casing	Diameter		Type of Backfill Material			
PVC	2-inc	ch	Portland Cement			
Type of Screen	Diameter		Type of Seal Material			
PVC	2-inc	ch	Bentonite			
Borehole Diameter	4 1/4	ļ"	Type of Filter Material No. 2 Sand			
Top of Casing	Elevation 1,166.78'	Depth 0.3' bgs	Well Details	Soil Classification	Depth (ft)	
Top of Seal	Elevation 1,165.08'	Depth 2' bgs	Flushmount	USCS Poorly-graded Gravelly Sand		
Top of Filter	Elevation 1,163.33'	Depth 3.8' bgs	Grout	Sand with some gravel	1 1 	
Top of Screen	Elevation 1,162.08'	Depth 5' bgs	−2" PVC Riser Bentonite		3	
Bottom of Filter	Elevation 1,152.08'	Depth 15' bgs		USCS Low Plasticity Gravelly Clay	- 4	
Bottom of Well	Elevation 1,152.08'	Depth 15' bgs		USCS Low Plasticity Silty Clay	5	
O Screen Length	10.0'	Slot Size 0.02-inch			<u> </u>	
TA	OUNDWATER ELEVATI (Measured from the Top of Casin	ng) ` ´		USCS Low Plasticity Gravelly Clay	- 7 8	
H Elevation	DTW 2.92' DTW	Date 8/11/2005			9	
Elevation 1163.78' Elevation 1163.60'	3.00'	Date 8/12/2005	No. 2 Sand	USCS Low Plasticity Clay	10	
	DTW 3.18'	Date 8/15/2005		OGGG LOW Flashicity Glay	E 11	
Elevation Elevation	DTW	Date			12	
Elevation	DTW	Date		LICOO Lave Diagram Co.	13	
Elevation	DTW	Date		USCS Low Plasticity Gravelly Clay Shale	— 14 - -	



Well No. MW-73A

Well Permit No. N/A

			VVCII I CITIIL ING. IN/
Project		Project No.	
	Beazer/INDSPEC Properties		2568412
Location		Elevation And Datum	
	Petrolia, Pennsylvania		1167.07 NAVD 1988
Drilling Agency		Date Started	Date Finished
	Bassett Envorinmental	8/10/2005	8/10/2005
Drilling Equipme	ent	Driller	<u> </u>
TO	Track Mounted Geoprobe 6620		Greg Landis
Size And Type o	of Bit	Inspector	
PLAI	2" OD, 60" Macrocore		Dennis Webster

Method of Installation

Method of Well Development

₹L					Dennis vvenster		
The ins fee ren	side the augers and a fill et of PVC riser. A filter p	ter pack was then added back of No. 2 sand was	d as the augers were placed in the borehole	removed. The well consist to 2.75' bgs. A bentonit	nered bedrock. A 2-inch PVC monitoring well wasted of 10 feet of 0.020-inch slot PVC well screer e seal was then placed from 1.5 to 2.75' bgs. The concrete pad was then installed.	n and 4	
S We	od of Well Development ell was developed on 8/ is purged over 15 minut		a submersible pump	at 0.85 gallons per minute	e until purged water became clear. A total of 10 g	gallons	
Type	of Casing	Diameter		Type of Backfill Material			
<u>⊅</u> P\	VC °	2-inc	h	Portland Cemer	nt		
٠٠ اند	of Screen	Diameter		Type of Seal Material			
P\	VC .	2-inc	h	Bentonite			
Boreh	nole Diameter	4 1/4	"	Type of Filter Material No. 2 Sand			
9 3:32	f Casing	Elevation 1,166.87'	Depth 0.2' bgs	Well Details	Soil Classification	Depth (ft)	
Top o		Elevation 1,165.57'	Depth 1.5' bgs	Flushmount		<u> </u>	
GPJ .	f Filter	Elevation 1,164.32'	Depth 2.8' bgs		USCS Poorly-graded Gravelly Sand	1	
JG LO	f Screen	Elevation 1,163.07'	Depth 4' bgs	2" PVC Rise Bentonite	er	- 2 - - - 3	
C BOF	m of Filter	Elevation 1,153.07'	Depth 14' bgs		USCS Well-graded Gravelly Sand	4	
NNDS	m of Well	Elevation 1,149.07'	Depth 14' bgs Slot Size			- - - 5	
ğ	n Length	10.0'	0.02-inch			6	
DATA/GINT	(Me	DWATER ELEVATION Easured from the Top of Casin	g) `´		USCS Poorly-graded Gravelly Sand	7	
비 Lievai	tion 63.80'	DTW 3.07'	Date 8/10/2005			<u> </u>	
Elevat		DTW	Date	No. 2 Sand		Ė	
~I	63.75'	3.12'	8/11/2005	2" PVC		9	
Elevat		DTW	Date		USCS Low Plasticity Gravelly Clay	10	
ш	63.56'	3.31'	8/15/2005			Ė.	
Elevat	tion	DTW	Date		USCS Poorly-graded Gravelly Sand	11	
Elevat	tion	DTW	Date			12	
Q:\DATA4\2568401\DATA Elevat	tion	DTW	Date			13	



Well No. MW-74A

Well Permit No. N/A

			Well I ellill No. N
Project		Project No.	
	Beazer/INDSPEC Properties		2568412
Location		Elevation And Datum	
	Petrolia, Pennsylvania		1165.25 NAVD 1988
Drilling Agency		Date Started	Date Finished
	Bassett Environmental	8/10/2005	8/10/2005
Drilling Equipme	ent	Driller	
	Track Mounted Geoprobe 6620		Greg Landis
Size And Type of	of Bit	Inspector	
	2" OD, 60" Macrocore		Dennis Webster

Method of Installation

Method of Well Development

with 4 1/4" inch outo		•				
Method of Installation The borehole was advanced with 4 1/4" inch outside diameter hollow stem augers to top of weathered bedrock. A 2-inch PVC monitoring well was installed inside the augers and a filter pack was then added as the augers were removed. The well consisted of 10 feet of 0.020-inch slot PVC well screen and 5 feet of PVC riser. A filter pack of No. 2 sand was placed in the borehole to 3' bgs. A bentonite seal was then placed from 1.5 to 2.0' bgs. The remainder of the borehole was filled with grout. A locking expandable cap, a flush mount, and a concrete pad was then installed. Method of Well Development Well was developed on 8/11/05 by pumping with a submersible pump at 1.5 gallons per minute until the well went dry. A total of 6 gallons was purged over 10 minutes when the well went dry.						
05 by pumping with	a submersible pump a	at 1.5 gallons per minu	ute until the we	ell went dry. A total of 6 gallons was p	urged over	
,		Type of Rackfill Mate	vrial			
	h	1 "				
	h	Bentonite				
4 1/4	"	Type of Filter Materia No. 2 Sand	al			
	Depth 0.2' bgs	Well Deta	nils	Soil Classification	Depth (ft)	
Elevation 1,163.75'	Depth 1.5' bgs		ount	Asphalt		
Elevation 1,162.25'	Depth 3' bgs	Z Grout	-	USCS Low Plasticity Gravelly Clay	1	
Elevation 1,160.25'	Depth 5' bgs		Riser		3	
Elevation 1,150.25'	Depth 15' bgs			USCS LOW Plasticity Slity Clay	4	
Elevation 1,150.25'	Depth 15' bgs				5	
10.0'	Slot Size 0.02-inch			USCS Low Plasticity Clay	6	
red from the Top of Casin	g)				- 7 - - 8	
4.19'	8/11/2005	No. 2 Sa	and	USCS Poorly-graded Gravelly Sand	9	
4.27'	Date 8/12/2005	2" PVC			10	
DTW 4.29'	Date 8/15/2005			USCS Low Plasticity Gravelly Clay	11	
ЭТW	Date				12	
OTW	Date				13	
OTW	Date			Sandetono	14	
	Diameter 2-inc Diameter 2-inc Diameter 2-inc Diameter 2-inc 1,165.05' Elevation 1,163.75' Elevation 1,160.25' Elevation 1,150.25' Elevation 1,150.25' Levation 1,150.	Diameter 2-inch Diameter 2-inch Diameter 2-inch 1,165.05' 0.2' bgs Elevation 1,163.75' 1.5' bgs Elevation 1,162.25' 3' bgs Elevation 1,160.25' 5' bgs Elevation 1,150.25' 15' bgs Elevation 1,15' bgs Elevation 1,150.25' 15' bgs Elevation 1,15' bgs Elevation 1,15' bgs Elevation 1,15' bgs Elevation 1,15' bgs Ele	Diameter 2-inch Diameter 2-inch Diameter 2-inch Diameter 2-inch Diameter 3-inch Diameter 1,165.05' Depth 1,163.75' 1.5' bgs Elevation 1,160.25' Depth 1,150.25' Depth 1,150.25	Diameter 2-inch Diameter 2-inch Diameter 2-inch Diameter 2-inch Diameter 3-inch Diameter 1,165.05' 1.5' bgs Elevation 1,162.25' 15' bgs Elevation 1,150.25' 15' bgs Elevat	Diameter 2-inch Diameter 2-inch Diameter 2-inch Diameter 3-inch Diameter 4 1/4" Elevation 1,165,05' 0.2' bgs Elevation 1,162,25' 3' bgs Elevation 1,160,25' 15' bgs Elevation 1,150,25' 15' bgs Elevation 1,160,25' 15' bgs Eleva	



Well No. WP-05

Well Permit No. N/A

Project	Project No.	
Beazer/INDSPEC Properties		2568412
Location	Elevation And Datum	
Petrolia, Pennsylvania		1165 NAVD 1988
Drilling Agency	Date Started	Date Finished
Pennsylvania Drilling	2/22/2006	2/23/2006
Drilling Equipment	Driller	
Electric Drill/Hand Tools		Jim Lang
Size And Type of Bit	Inspector	
3" OD Core Bit/2" OD, 1 3/4" OD Split Spoon		Dennis Webster
Method of Installation	•	

Elect	Electric Drill/Hand Tools			Jim Lang				
TSIZE AND TYDE OF BIL	· Laize and Type of bit			Inspector				
3" OL	3" OD Core Bit/2" OD, 1 3/4" OD Split Spoon			Dennis Webster				
The borehole was first OD temporary casing A filter pack of No. 2 Fitter best of the seal to ground sur								
	Method of Well Development							
Temporary well point in the second of the se	not developed.							
Type of Casing PVC	Diameter 1-inc	eh	Type of Backfill M. Portland C					
Type of Screen	Diameter		Type of Seal Mate					
PVC	1-ind	ch	Bentonite					
Borehole Diameter	Borehole Diameter Type of Filter Mate							
Top of Casing	Elevation 1,165.00'	Depth 0' bgs	We We	II Details	Soil Classification	Depth (ft)		
Top of Seal	Elevation 1,164.40'	Depth 0.6' bgs	G ro∟	ut	Concrete	-		
Top of Filter	Elevation 1,163.00'	Depth 2' bgs	411 D	VC Riser	USCS Poorly-graded Gravel	1		
Top of Screen	Elevation 1,162.40'	Depth 2.6' bgs		onite	Concrete	2		
Bottom of Filter	Elevation 1,155.40'	Depth 9.6' bgs			USCS Poorly-graded Gravel	- 1		
Bottom of Well	Elevation 1,155.40'	Depth 9.6' bgs			Brick USCS Low Plasticity Gravelly Clay	3		
O O O O O O O O O O O O O O O O O O O	7.0'	Slot Size 0.02-inch				- 4		
GRO GRO	UNDWATER ELEVAT (Measured from the Top of Casi	IONS (ft)			USCS High Plasticity Clay	- - - 5		
Elevation 1163.36'	DTW 1.64'	Date 2/22/2006		2 Filoro	USCS Low Plasticity Silty Clay	- 3		
1163.36' Elevation 1163.75'	DTW 1.25'	Date 2/23/2006	Sand	2 Filpro d VC Screen	USCS Silty Sand	- 6		
Elevation	DTW	Date				<u> </u>		
Elevation 1163.55'	1.45'	2/27/2006			USCS Low Plasticity Silty Clay	7		
Elevation Elevation	DTW	Date				- 8		
Elevation	DTW	Date			USCS Clayey Sand			
Elevation Elevation	DTW	Date				- - 9 -		
٥ ــــ			1. 1 1 1 1		I.			



Well No. WP-06

Well Permit No. N/A

	VVEILE CITTIL INO. IN/P
Project No.	
	2568412
Elevation And Datum	
	1165.88 NAVD 1988
Date Started	Date Finished
2/21/2006	2/22/2006
Driller	•
	Jim Lang
Inspector	
	Dennis Webster
	Elevation And Datum Date Started 2/21/2006 Driller

Method of Well Development

GDT	Electric Drill/Hand Tools			Jim Lang				
	·Tolze and Type of bil			Inspector				
PLA		O Core Bit/2" OD, 1 3	/4" OD Split Spoo	on	Dennis Webster			
CONSTRUCTION_SUMMARYTemplate TEMPLATE								
RUC								
-ANGAN_WELL_CONSTI								
- LANG	Type of Casing PVC	Diameter 1-inc	ch	Type of Backfill M Portland C				
Log	Type of Screen	Diameter		Type of Seal Mate				
port:	PVC	1-inc	ch	Bentonite	onai			
. Re	Borehole Diameter Type of Filter Material							
P.		2"		No. 2 Filpr	o Sand			
9 3:32:37	Top of Casing	Elevation 1,165.88'	Depth 0' bgs	₩€	ell Details	Soil Classification	Depth (ft)	
11/2/200	Top of Seal	Elevation 1,165.28'	Depth 0.6' bgs	Gro	ut	Concrete	-	
.GPJ	Top of Filter	Elevation 1,164.88'	Depth 1' bgs		tonite VC Riser	USCS Poorly-graded Gravel Concrete	1	
G LOGS	Top of Screen	Elevation 1,163.58'	Depth 2.3' bgs			USCS Poorly-graded Gravel		
BORIN	Bottom of Filter	Elevation 1,155.58'	Depth 10.3' bgs			USCS Low Plasticity Silty Clay		
NDSPE	Bottom of Well	Elevation 1,155.58'	Depth 10.3' bgs			USCS Low Plasticity Gravelly Clay	3	
T LOGS\	Screen Length	8.0'	Slot Size 0.02-inch				- 4 -	
DATA/GINT	GRO	UNDWATER ELEVAT (Measured from the Top of Casi	ONS (ft)			USCS Poorly-graded Sand with Clay	5	
	Lievation	DTW	Date		2 Filpro		-	
)FFI(1162.13'	3.75'	2/21/2006	San	a VC Screen	USCS Low Plasticity Silty Clay	- 6	
PHILLY\OFFICE	Elevation 1163.58'	DTW 2.3'	Date 2/22/2006		. 5 5016611	USCS Low Plasticity Silty Clay	Ē	
표	Elevation	DTW	Date			USCS Low Plasticity Silty Clay	- 7	
FROM	1164.53'	1.35'	2/23/2006				-	
		DTW	Date				- - 8 -	
Q:\DATA4\2568401\DATA	Elevation	DTW	Date			Low Plasticity Silty Clay, then Weathered Sandstone @ 10.3 ft	9	
Q:\DATA	Elevation	DTW	Date			3	- - - 10	



Well No. WP-07

Well Permit No. N/A

		VVCII I CITIIL INO. IN/
Project	Project No.	
Beazer/INDSPEC Properties		2568412
Location	Elevation And Datum	
Petrolia, Pennsylvania		1165.75 NAVD 1988
Drilling Agency	Date Started	Date Finished
Pennsylvania Drilling	2/24/2006	2/27/2006
Drilling Equipment	Driller	
Electric Drill/Hand Tools		Jim Lang
Size And Type of Bit 3" OD Core Bit/2" OD. 1 3/4" OD Split Spoon	Inspector	
3" OD Core Bit/2" OD, 1 3/4" OD Split Spoon		Dennis Webster
Mothed of Installation	· · · · · · · · · · · · · · · · · · ·	

Method of Well Development

Method of Installation The borehole was first sampled with 2" OD by 2' and 1 3/4 " OD by 2' long split spoons and cored with a 2 1/4" OD core bit to the top of weathered bedrock. A 2" OD temporary casing was then advanced down to11.5' bgs. A 1" diameter well was then installed with 5.0 feet of 0.02-inch slot PVC and 7.5' of PVC riser. A filter pack of No. 2 Filpro sand was then placed into the borehole to 5.0' bgs and a bentonite seal was placed to 2.0' bgs. Concrete was then placed over the seal to ground surface. Method of Well Development Well was developed on 3/9/06 using a peristaltic pump. The well went dry after 20 minutes of pumping at 0.05 gal/min.						
Method of Well Developme Well was developed of Type of Casing	ent on 3/9/06 using a peristaltic	pump. The well went	dry after 20	minutes of pumping	at 0.05 gal/min.	
Type of Casing	Diameter			ackfill Material		
	1-in		1	and Cement		
Type of Screen PVC	Diameter 1-in e		Bento			
Borehole Diameter 2" Type of Filter Material No. 2 Filpro Sand						
Top of Casing	Elevation 1,165.75'	Depth 0' bgs		Well Details	Soil Classification	Depth (ft)
Top of Seal	Elevation 1,163.75'	Depth 2' bgs			Concrete	-
Top of Filter Top of Screen	Elevation 1,160.75'	Depth 5' bgs		Grout		<u> </u>
	Elevation 1,159.25'	Depth 6.5' bgs				2
Bottom of Filter	Elevation 1,154.25'	Depth 11.5' bgs		—1" PVC Riser	Poorly Graded Gravel with Silt Concrete	3
Bottom of Well	Elevation 1,154.25'	Depth 11.5' bgs		■Bentonite		4
Screen Length	5.0'	Slot Size 0.02-inch			Concrete	5
	UNDWATER ELEVAT (Measured from the Top of Cas	ing) ` ´				- - - 6
Elevation 1158.95'	6.8'	Date 2/27/2006			USCS Poorly-graded Sand with Silt	- 7
Elevation 1158.37'	7.38'	Date 2/28/2006				Ė
Elevation 1163.33'	DTW 2.42'	Date 3/3/2006		No. 2 Filpro Sand	USCS Clayey Sand	8
Elevation 1157.14'	DTW 8.61'	Date 3/9/2006		—1" PVC Screen	USCS Low Plasticity Sandy Clay	9
Elevation	DTW	Date		:		10
Elevation 1157.14' Elevation Elevation	DTW	Date			Poorly graded sandy clay	11



Well No. WP-08

Well Permit No. N/A

		VVCII I CITIIL INO. IN//
Project	Project No.	
Beazer/INDSPEC Properties		2568412
Location	Elevation And Datum	
Petrolia, Pennsylvania		1165.67 NAVD 1988
Drilling Agency	Date Started	Date Finished
Pennsylvania Drilling	2/27/2006	2/27/2006
Drilling Equipment	Driller	
Electric Drill/Hand Tools Size And Type of Bit 3" OD Core Bit/2" OD 1 2/4" OD Split Speep		Jim Lang
Size And Type of Bit	Inspector	
3" OD Core Bit/2" OD, 1 3/4" OD Split Spoon		Dennis Webster
Method of Installation		·

Method of Well Development

GDT	Electric Drill/Hand Tools				Jim Lang				
	· LOIZE AND TYDE OF DIF			Inspector					
PLA		Ocore Bit/2" OD, 1 3	/4" OD Split Spoo	n			Dennis Webster		
CONSTRUCTION_SUMMARYTemplate TEMPLATE	Method of Installation The borehole was first sampled with 2" OD by 2' and 1 3/4 " OD by 2' long split spoons and cored with a 2 1/4" OD core bit to the top of weathered bedrock. A 2" OD temporary casing was then advanced down to11.0' bgs. A 1" diameter well was then installed with 7.0 feet of 0.02-inch slot PVC and 5.0' of PVC riser. A filter pack of No. 2 Filpro sand was then placed into the borehole to 2.0' bgs and a bentonite seal was placed to 1.0' bgs. Concrete was then placed over the seal to ground surface.								
SUC.									
_ANGAN_WELL_CONSTF	Method of Well Developme Well was developed or		pump. The well had a	ı depth	to wate	er of 4.69 after 15।	minutes of pumping at 0.08 gal/min.		
LANGA	Type of Casing PVC	Diameter 1-inc	·h	1		dill Material			
- go	Type of Screen	Diameter	<i>,</i> , ,			Material			
port:	PVC	1-inc	:h	1	entor				
. Re	F. Borehole Diameter Type of Filter Material								
P.		2"		N	lo. 2 F	ilpro Sand			
3:32:52	Top of Casing	Elevation 1,165.67'	Depth 0' bgs		7	Well Details	Soil Classification	Depth (ft)	
1/2/2008	Top of Seal	Elevation 1,164.67'	Depth 1' bgs			-Grout	Concrete	-	
GPJ 1	Top of Filter	Elevation 1,163.67'	Depth 2' bgs				USCS Poorly-graded Sand with Clay	1	
G LOGS	Top of Screen	Elevation 1,161.67'	Depth 4' bgs	j.; i.		-Bentonite -1" PVC Riser		2	
BORIN	Bottom of Filter	Elevation 1,154.67'	Depth 11' bgs				USCS Low Plasticity Gravelly Clay		
INDSPE	Bottom of Well	Elevation 1,154.67'	Depth 11' bgs					- 4	
r Logs\	Screen Length	7.0'	Slot Size 0.02-inch				Congrete		
DATA/GINT	GROL	JNDWATER ELEVATI (Measured from the Top of Casi	ng) ` ´				Concrete	<u> </u>	
PHILLY/OFFICE [Elevation 1162.81'	DTW 2.86'	Date 2/27/2006			-No. 2 Filpro	USCS Poorly-graded Sand	6	
LY	Elevation	DTW	Date	7.1		Sand		7	
ᆵ	1161.86'	3.81'	2/28/2006			-1" PVC Screen		Ė	
FROMF	Elevation 1160.98'	DTW 4 60'	Date 3/8/2006					- 8	
	Elevation	4.69' DTW	3/8/2006 Date	4.1				ļ ,	
DAT	LIEVALION	DIVV	Date				USCS Clayey Sand	9	
Q:\DATA4\2568401\DATA	Elevation	DTW	Date					10	
Q:\DATA4	Elevation	DTW	Date					-	



Well No. WP-09

Well Permit No. N/A

		VVCII I CITIIL ING. IN/
Project	Project No.	
Beazer/INDSPEC Properties		2568412
Location	Elevation And Datum	
Petrolia, Pennsylvania		1165.66 NAVD 1988
Drilling Agency	Date Started	Date Finished
Pennsylvania Drilling	2/27/2006	2/28/2006
Drilling Equipment	Driller	<u> </u>
Electric Drill/Hand Tools		Jim Lang
Size And Type of Bit 2" OD Core Bit/2" OD 1 3/4" OD Split Speep	Inspector	
3 OD Core Biv2 OD, 1 3/4 OD Spiil Spooti		Dennis Webster
Method of Installation		

Method of Well Development

GDT	Electric Drill/Hand Tools			Jim Lang				
	-1 Size And Type of bit			Inspector				
PLA ⁻	3" OD Core Bit/2" OD, 1 3/4" OD Split Spoon			on	Dennis Webster			
CONSTRUCTION_SUMMARYTemplate TEMPLATE								
RUC-								
_ANGAN_WELL_CONSTF	Method of Well Developm Well was developed		pump. The well had a	a depth to water of a	4.12 after 28	minutes of pumping at 0.06 gal/min.		
- LANG	Type of Casing PVC	Diameter 1-inc	:h	Type of Backfill M Portland C				
Log	Type of Screen	Diameter		Type of Seal Mate	erial			
port	PVC	1-inc	:h	Bentonite				
PM Re	Borehole Diameter	2"		Type of Filter Mate				
9 3:32:59	Top of Casing	Elevation 1,165.66'	Depth 0' bgs	We We	II Details	Soil Classification	Depth (ft)	
/2/200	Top of Seal	Elevation 1,165.16'	Depth 0.5' bgs	G ro∟	ut	Concrete	-	
11/	Top of Filter	Elevation	Depth			USCS Silty Sand	_{	
GPJ.	. op o mo.	1,163.66'	2' bgs	⋖ -Bent	onite	, , , , , , , , , , , , , , , , , , , ,	- 1	
S LOGS.	Top of Screen	Elevation 1,162.66'	Depth 3' bgs		VC Riser		- - 2	
BORING	Bottom of Filter	Elevation 1,154.66'	Depth 11' bgs				3	
NDSPEC	Bottom of Well	Elevation 1,154.66'	Depth 11' bgs			USCS Low Plasticity Silty Clay		
GS/II	Screen Length		Slot Size				- 4	
T LO		8.0'	0.02-inch			USCS Low Plasticity Gravelly Clay	_	
DATA\GINT	GRO	OUNDWATER ELEVATI (Measured from the Top of Casin				Concrete	5 - -	
E D	Elevation	DTW	Date			USCS Low Plasticity Gravelly Clay	6	
)FFI	1162.27'	3.39'	2/28/2006		2 Filpro		-	
PHILLY\OFFICE	Elevation	DTW	Date	Sand	d VC Screen		7	
PHIL	1162.19'	3.47'	3/1/2006			USCS Clayey Sand	Ŧ	
FROM	Elevation 1161.54'	DTW 4.12'	Date 3/8/2006				- 8	
	Elevation	DTW	Date			USCS Poorly-graded Sand with Clay	7	
1\DA							- 9	
\256840	Elevation	DTW	Date				-	
Q:\DATA4\2568401\DATA	Elevation	DTW	Date				— 10 - - -	
Ø								



Well No. WP-10

Well Permit No. N/A

		VVCII I CITIIL INO. IN//
Project	Project No.	
Beazer/INDSPEC Properties		2568412
Location	Elevation And Datum	
Petrolia, Pennsylvania		1165.87 NAVD 1988
Drilling Agency	Date Started	Date Finished
Pennsylvania Drilling	3/3/2006	3/3/2006
Drilling Equipment	Driller	
Electric Drill/Hand Tools		Jim Lang
Size And Type of Bit	Inspector	
3" OD Core Bit/2" OD, 1 3/4" OD Split Spoon		Dennis Webster
Method of Installation	•	

Method of Well Development

Electric Drill/Hand Tools			Jim Lang			
Size And Type of Bit			Inspector			
₹ 3" OD	O Core Bit/2" OD, 1 3	/4" OD Split Spoo	on	Dennis Webster		
OD temporary casing	was then advanced down ilpro sand was then placed	to 7.2' bgs. A 1" diam	eter well was then in	nstalled with 5	OD core bit to the top of weathered bedrown 5.0 feet of 0.02-inch slot PVC and 3.2' of placed to 0.5' bgs. Concrete was then p	PVC riser.
Method of Well Developme	ent					
	n 3/8/06 using a peristaltic	pump. The well had a	a depth to water of 4	1.96 after 18 i	minutes of pumping at 0.04 gal/min.	
Type of Casing						
Type of Casing PVC	Diameter 1-in d		Type of Backfill Mac Portland C			
Type of Screen	Diameter		Type of Seal Mate	rial		
PVC	1-ind	ch	Bentonite			
Borehole Diameter	2"	Type of Filter Mate				
Top of Casing	Elevation 1,165.87'	Depth 0' bgs	We We	ll Details	Soil Classification	Depth (ft)
Top of Seal	Elevation 1,165.37'	Depth 0.5' bgs	Grou	ıt	Concrete	
: Top of Filter	Elevation 1,164.37'	Depth 1.5' bgs				-
Top of Screen	Elevation 1,163.67'	Depth 2.2' bgs	— Bent 1" P\	onite /C Riser	USCS Poorly-graded Gravel USCS Low Plasticity Silty Clay	1
Bottom of Filter	Elevation 1,158.67'	Depth 7.2' bgs				- - - 2
Bottom of Well	Elevation 1,158.67'	Depth 7.2' bgs			USCS Low Plasticity Gravelly Clay	
Screen Length	5.0'	Slot Size 0.02-inch			Concrete	3
GROU Elevation	JNDWATER ELEVAT (Measured from the Top of Casi	IONS (ft)				-
Elevation	DTW	Date			L	- 4
문 1164.27'	1.60'	3/3/2006		2 Filpro		ļ- [']
1164.27' Elevation 1161.92'	DTW	Date	Sand	i '		-
를 1161.92'	3.95'	3/4/2006	1" P\	/C Screen		<u> </u>
Elevation 2 1162.94'	DTW 2.93'	Date 3/8/2006			Concrete	5
			$\dashv : \exists : \exists$			
Elevation	DTW	Date				- - 6
Elevation	DTW	Date			Sand with some gravel	+
Elevation Elevation	DTW	Date			Weathered Condition	7
σ L			<u> </u>		Weathered Sandstone	



Well No. WP-11

Well Permit No. N/A

		Well Perfill No. N/F
Project	Project No.	
Beazer/INDSPEC Properties		2568412
Location	Elevation And Datum	
Petrolia, Pennsylvania		1165.85 NAVD 1988
Drilling Agency	Date Started	Date Finished
Pennsylvania Drilling	2/28/2006	3/1/2006
Drilling Equipment	Driller	
Electric Drill/Hand Tools		Jim Lang
Size And Type of Bit 3" OD Coro Bit/2" OD 1 3/4" OD Split Spoop	Inspector	
3" OD Core Bit/2" OD, 1 3/4" OD Split Spoon		Dennis Webster
Method of Installation	· · · · · · · · · · · · · · · · · · ·	·

GDT	Electric Drill/Hand Tools			Jim Lang			
	· LOIZE AND TYDE OLDII			Inspector			
PLA.		3" OD Core Bit/2" OD, 1 3/4" OD Split Spoon			Dennis Webster		
CONSTRUCTION_SUMMARYTemplate TEMPLATE	casing was then adva No. 2 Filpro sand was ground surface.	anced down to 8.6' bgs. A	1" diameter well was th	en installed with 7	.0 feet of 0.02	o the top of weathered bedrock. A 2" OD -inch slot PVC and 2.6' of PVC riser. A flogs. Concrete was then placed over the s	iter pack of
RUC							
-ANGAN_WELL_CONST	Method of Well Developme Well was developed of	ent on 3/8/06 using a peristaltic	pump. The well went	dry after six minut	es of pumping	at 0.042 gal/min.	
- LANG	Type of Casing PVC	Diameter 1-ind	ch	Type of Backfill N			
Log	Type of Screen	Diameter		Type of Seal Mat	erial		
port	PVC	1-ind	ch	Bentonite			
 R	Borehole Diameter			Type of Filter Ma			
» PM		2"		No. 2 Filpi	o Sand		
9 3:33:13	Top of Casing	Elevation 1,165.85'	Depth 0' bgs	J W	ell Details	Soil Classification	Depth (ft)
11/2/200	Top of Seal	Elevation 1,165.35'	Depth 0.5' bgs	G ro	ut	Concrete	-
GPJ	Top of Filter	Elevation 1,164.85'	Depth 1' bgs		tonite VC Riser	Limestone	1
S TOGS	Top of Screen	Elevation 1,164.25'	Depth 1.6' bgs			USCS Low Plasticity Gravelly Clay	- +
BORIN	Bottom of Filter	Elevation 1,157.25'	Depth 8.6' bgs				_ 2
NDSPEC	Bottom of Well	Elevation 1,157.25'	Depth 8.6' bgs				3
LOGS	Screen Length	7.0'	Slot Size 0.02-inch			USCS Low Plasticity Sandy Clay	-
DATA/GINT	GRO	UNDWATER ELEVAT				USCS Low Plasticity Silty Clay	- 4
E DA	Elevation	DTW	Date		2 Filpro	USCS Low Plasticity Silty Clay	
PHILLY\OFFICE	1164.85'	1.0'	3/1/2006	:Sar	id .	Concrete	5
ρ	Elevation	DTW	Date	70 ₽ ₩ 1"F	VC Screen		F
Ĭ	1162.23'	3.62'	3/3/2006				ļ.
FROM F	Elevation	DTW	Date			Wood	- 6
	1158.62'	7.23'	3/8/2006			Wood USCS Silty Sand	ţ
11/DAT	Elevation	DTW	Date			USCS Low Plasticity Silty Clay	7
256840	Elevation	DTW	Date			Weathered Sandstone	+
Q:\DATA4\2568401\DATA	Elevation	DTW	Date				- 8 -
ö							



Well No. WP-12

Well Permit No. N/A

	Well ellillio. No
Project	Project No.
Beazer/INDSPEC Properties	2568412
Location	Elevation And Datum
Petrolia, Pennsylvania	1165.79 NAVD 1988
Drilling Agency	Date Started Date Finished
Pennsylvania Drilling	3/1/2006 3/2/2006
Drilling Equipment	Driller
Electric Drill/Hand Tools	Jim Lang
Size And Type of Bit 3" OD Core Bit/2" OD Split Speep	Inspector
3" OD Core Bit/2" OD Split Spoon	Dennis Webster
Mathead of locatellation	

Method of Well Development

Electric Drill/Hand Tools				Jim Lang			
			Inspector				
	Core Bit/2" OD Spil	Spoon			Dennis Webster		
The borehole was first weathered bedrock. A PVC and 2.5' of PVC	A 2" OD temporary casing varies. A filter pack of No. 2	vas then advanced dov Filpro sand was then p	vn to 8.5' bas	. A 1" diameter we	ell was then installed with 7.0 feet of 0.02	inch slot	
		pump. The well had a	depth to wat	er of 4.12 after 23	minutes of pumping at 0.07 gal/min.		
·	5 .		•				
Type of Casing PVC	Diameter 1-inc	 ch					
	Diameter	**					
PVC	1-inc	ch	1 "				
Borehole Diameter	2"						
Top of Casing	Elevation 1,165.79'	Depth 0' bgs		Well Details	Soil Classification	Depth (ft)	
Top of Seal	Elevation 1,165.39'	Depth 0.4' bgs		Grout	Concrete	-	
Top of Filter	Elevation 1,164.79'	Depth 1' bgs		⊫Bentonite 1" PVC Riser		_ _ _ 1	
Top of Screen	Elevation 1,164.29'	Depth 1.5' bgs			USCS Low Plasticity Gravelly Clay	- - -	
Bottom of Filter	Elevation 1,157.29'	Depth 8.5' bgs			USCS Low Plasticity Sandy Clay	_ 2	
Bottom of Well	Elevation 1,157.29'	Depth 8.5' bgs				- - - 3	
Screen Length	7.0'	Slot Size 0.02-inch			USCS Low Plasticity Silty Clay		
GRO	UNDWATER ELEVATI (Measured from the Top of Casi	ONS (ft)				_ 4 _	
Elevation	DTW	Date	$\mathbb{T} \parallel \mathbb{I}$		Sand and Gravel		
				_Sand 1" PVC Screen	Concrete	5	
1162.79'	3.0'	3/2/2006				Ė	
Elevation 1162.44'	DTW 3.35'	Date 3/3/2006				- 6	
Elevation	DTW	Date			Poorly-graded Gravel w/some Sand	-	
1161.54'	4.25'	3/8/2006			Poorly-graded Sand with Clay	7	
Elevation	DTW	Date				-	
Elevation	DTW	Date			Low Plasticity Sandy Clay Weathered Sandstane	8	
	Size And Type of Bit 3" OE Method of Installation The borehole was first weathered bedrock. A PVC and 2.5' of PVC Concrete was then plate of the policy of the policy of PVC Concrete was then plate of the policy of the pvC and 2.5' of PVC Concrete was then plate of the pvC and 2.5' of PVC Concrete was then plate of the pvC and 2.5' of PVC Type of Casing Type of Casing PVC Type of Screen PVC Borehole Diameter Top of Screen Bottom of Filter Top of Screen Bottom of Filter GRO Elevation 1164.54' Elevation 1162.44' Elevation 1161.54' Elevation 1161.54' Elevation	Size And Type of Bit 3" OD Core Bit/2" OD Splir Method of Installation The borehole was first sampled with 2" OD by 2' weathered bedrock. A 2" OD temporary casing v PVC and 2.5 of PVC riser. A filter pack of No. 2 Concrete was then placed over the seal to ground PVC and 2.5 of PVC riser. A filter pack of No. 2 Concrete was then placed over the seal to ground PVC and 2.5 of PVC riser. A filter pack of No. 2 Concrete was then placed over the seal to ground PVC 1-inc Type of Screen Diameter Type of Screen Diameter Type of Screen Diameter Top of Screen Diameter 2" Top of Casing Elevation 1,165.79' Top of Seal Elevation 1,165.39' Top of Filter Elevation 1,164.79' Top of Screen Elevation 1,164.29' Bottom of Filter Elevation 1,157.29' Bottom of Well Elevation 1,157.29' Screen Length 7.0' GROUNDWATER ELEVATI (Measured from the Top of Casin Time Type of Casin Type of Casin Type Type Type Type Type Type Type Type	Size And Type of Bit 3" OD Core Bit/2" OD Split Spoon Method of Installation The borehole was first sampled with 2" OD by 2 and 1 3/4" OD by 2' lo weathered bedrock. A 2" OD temporary casing was then advanced dov PVC and 2.5' of PVC riser. A filter pack of No. 2 Filipro sand was then placed over the seal to ground surface. Method of Well Development Well was developed on 3/8/06 using a peristaltic pump. The well had a concrete was then placed over the seal to ground surface. Method of Well Development Well was developed on 3/8/06 using a peristaltic pump. The well had a concrete was then placed over the seal to ground surface. Type of Casing Diameter PVC 1-inch Type of Screen PVC 1-inch Top of Screen PVC 1-inch Top of Casing Elevation Depth 1,165.79' 0' bgs Top of Seal Elevation Depth 1,165.39' 0.4' bgs Top of Filter Elevation Depth 1,164.79' 1' bgs Top of Screen Elevation Depth 1,164.29' 1.5' bgs Bottom of Filter Elevation Depth 1,157.29' 8.5' bgs Screen Length Flevation Depth 1,157.29' 8.5' bgs Screen Length Type of Casing Elevation Depth 1,157.29' 8.5' bgs Screen Length Type of Casing Diameter PVC 1-inch Type of Casing Depth 1,157.29' 8.5' bgs Screen Length Type of Casing Diameter Type of Casing Diameter PVC 1-inch Type of Casing Depth 1,164.79' 1' bgs Top of Screen Depth 1,164.29' 1.5' bgs Screen Length Type of Casing Depth Type of Casing Depth Type of Casing Diameter Type of Casing Diameter Type of Casing Diameter PVC 1-inch Type of Casing Depth Type of Casing Diameter PVC 1-inch Type of Casing Depth Type of Casing Diameter PVC 1-inch Type of Casing Depth Type of Casing Diameter PVC 1-inch Type of Casing Depth Type of Casing Diameter PVC Type of Casing Depth Type of Casing Diameter Type of Casing Diameter PVC Type of Casing Depth Type of Casing Diameter Type of Casing Depth Type of Cas	Size And Type of Bit 3" OD Core Bit/2" OD Split Spoon Method of Installation The borehole was first sampled with 2" OD by 2' and 1 3/4" OD by 2' long split spoor weathered bedrock. A 2" OD temporary casing was then advanced down to 8.5" bgs PVC and 2.5" of PVC inser. A filter pack of No. 2 Filipro sand was then placed into the Concrete was then placed over the seal to ground surface. Method of Well Development Well was developed on 3/8/06 using a peristaltic pump. The well had a depth to wat Type of Casing PVC 1-inch Type of Screen PVC 1-inch Portlat Type of Screen Diameter PVC 1-inch Borehole Diameter 2" Type of Filter 2" Top of Casing Elevation 1,165.79' 0' bgs Top of Screen Elevation 1,164.79' 1,164.79' 1,164.79' 1,164.29' 1,15' bgs Bottom of Filter Elevation 1,157.29' 8.5' bgs Bottom of Filter Elevation 1,157.29' 8.5' bgs Bottom of Well Elevation 1,157.29' 8.5' bgs Bottom of Well Elevation 1,157.29' 8.5' bgs Bottom of Well Elevation 1,157.29' 1,15' bate 1,164.54' 1,25' 3/1/2006 Elevation DTW Date 1162.44' 3.35' 3/3/2006 Elevation DTW Date 1162.44' 3.35' 3/8/2006 Elevation DTW Date 1161.54' 4.25' 3/8/2006 Elevation DTW Date 1161.54' 1,25' 3/8/2006 Elevation DTW Date 1161.54' 1,25' 3/8/2006	Size And Type of Bit 3" OD Core Bit/2" OD Split Spoon Method of Installation The borehole was first sampled with 2" OD by 2" and 1 3/4" OD by 2" long split spoons and cored with a weathered bedrock. A 2" OD temporary casing was then advanced down to 8.5" bgs. A "1 diameter PVC and 2.5" of PVC riser. A filter pack of No. 2 Filipro sand was then placed into the borehole to 1.5" b Concrete was then placed over the seal to ground surface. Method of Well Development Well was developed on 3/8/06 using a peristaltic pump. The well had a depth to water of 4.12 after 23 Type of Casing Type of Casing PVC 1-inch Portland Cement Type of Sacreen PVC 1-inch Portland Cement Type of Seal Material Bentonite 2" Top of Screen PVC 1-inch Portland Cement Type of Filter Material No. 2 Filipro Sand Top of Casing Elevation 1,165.79' 0' bgs Top of Filter Elevation 1,164.79' 1' bgs For Filter 1,164.29' 1.5' bgs Bottom of Filter Elevation 1,157.29' 8.5' bgs Screen Length Type of Casing Top of Casing Top of Screen PVC Top of Screen PVC Top of Screen Elevation 1,157.29' 8.5' bgs Coreen Length Type of Casing Top of Screen Type of Casing Type of Casing Type of Casing Top of Screen Type of Casing Type of Screen Typ	Method of Installation The borehole was first sampled with 2° OD by 2' and 134" OD by 2' long split spoons and cored with a 3" OD and a 2 1/4" OD core bit to the to weathered decode. A 2" of Demporary casing was then advanced down to 8.5 bgs. A 1" diameter well was then installed with 7.0 feet of 0.02 PVC and 2.2" of PVC and 2.5" of PVC and 2.5	



Well No. WP-13

Well Permit No. N/A

		VVCII I CITIIL INO. IN/F
Project	Project No.	
Beazer/INDSPEC Properties		2568412
Location	Elevation And Datum	
Petrolia, Pennsylvania		1165.72 NAVD 1988
Drilling Agency	Date Started	Date Finished
Pennsylvania Drilling	3/2/2006	3/2/2006
Drilling Equipment	Driller	•
Electric Drill/Hand Tools		Jim Lang
Size And Type of Bit	Inspector	
3" OD, 2 1/4" OD Core Bit/2" OD Split Spoon		Dennis Webster
Mothod of Installation	•	

Method of Well Development

GDT	Electric Drill/Hand Tools			Jim Lang			
	Size And Type of Bit		(all an a live		Inspector		
۲	3" OE), 2 1/4" OD Core Bit	/2" OD Split Spoo	n	Dennis Webster		
SUMMARYTemplate TEMPLATE	Method of Installation The borehole was first sampled with 2" OD by 2' long split spoons and cored with a 3" OD and a 2 1/4" OD core bit to the top of weathered bedrock. A 2" OD temporary casing was then advanced down to 8.5' bgs. A 1" diameter well was then installed with 7.0 feet of 0.02-inch slot PVC and 2.5' of PVC riser. A filter pack of No. 2 Filpro sand was then placed into the borehole to 1.5' bgs and a bentonite seal was placed to 1.0' bgs. Concrete was then placed over the seal to ground surface.						
ELL_CONSTRUCTION_SUMMARY	Method of Well Developme Well was developed o		pump. The well had a	depth to water of	4.13 after 12 ı	minutes of pumping at 0.08 gal/min.	
-ANGAN_WELL							
J-LANG	Type of Casing PVC	Diameter 1-ind	ch	Type of Backfill M Portland C			
t: Lo	Type of Screen	Diameter		Type of Seal Mate	erial		
eport	PVC	1-ind	ch	Bentonite			
PM R	Borehole Diameter Z" Type of Filter No. 2 F				aterial oro Sand		
9 3:33:28	Top of Casing	Elevation 1,165.72'	Depth 0' bgs	₩€	ell Details	Soil Classification	Depth (ft)
11/2/200	Top of Seal	Elevation 1,165.32'	Depth 0.4' bgs	Gro	ut	Concrete	-
.GPJ	Top of Filter	Elevation 1,164.72'	Depth 1' bgs	Ben 1" P	tonite VC Riser		- - - 1
G LOGS	Top of Screen	Elevation 1,164.22'	Depth 1.5' bgs			USCS Low Plasticity Gravelly Clay	-
BORIN	Bottom of Filter	Elevation 1,157.22'	Depth 8.5' bgs				_ 2
NDSPE(Bottom of Well	Elevation 1,157.22'	Depth 8.5' bgs			USCS High Plasticity Clay	- - - 3
r Logs\	Screen Length	7.0'	Slot Size 0.02-inch				-
DATA/GINT	GROUNDWATER ELEVATIONS (ft) (Measured from the Top of Casing)					USCS Low Plasticity Silty Clay	- 4
ÄΕρ	Elevation	DTW	Date	T. :■ Leno.	2 Filpro		
FFIC	1163.72'	2.0'	3/2/2006	San		Wood Concrete	5
PHILLY\OFFICE	Elevation	DTW	Date		vo sueen		F
분	1162.10'	3.62'	3/3/2006				<u> </u>
FROM F	Elevation	DTW	Date				- 6
	1161.81'	3.91'	3/8/2006				-
01\DAT	Elevation	DTW	Date			USCS Low Plasticity Sandy Clay	7
1/25684(Elevation	DTW	Date			2200 Zon . Monory Guridy Gray	-
Q:\DATA4\2568401\DATA	Elevation	DTW	Date			Weathered Sandstone	8



Well No. WP-14

Well Permit No. N/A

		VVCIII CIIIILINO. IN/A
Project	Project No.	
Beazer/INDSPEC Properties		2568412
Location	Elevation And Datum	
Petrolia, Pennsylvania		1165.8 NAVD 1988
Drilling Agency	Date Started	Date Finished
Pennsylvania Drilling Company	3/2/2006	3/2/2006
Drilling Equipment	Driller	
Electric Drill/Hand Tools		Jim Lang
Size And Type of Bit	Inspector	
3" OD, 2 1/4" OD Core Bit/2" OD Split Spoon		Dennis Webster
Method of Installation	· · · · · · · · · · · · · · · · · · ·	·

Method of Well Development

GDT	Electric Drill/Hand Tools			Jim Lang			
	Taize and Type of bit			Inspector			
۲	3" OI	D, 2 1/4" OD Core Bit	/2" OD Split Spoo	n	Dennis Webster		
UMMARYTemplate TEMPLATE	Method of Installation The borehole was first sampled with 2" OD by 2' long split spoons and cored with a 3" OD and a 2 1/4" OD core bit to the top of weathered bedrock. A 2" OD temporary casing was then advanced down to 7.8' bgs. A 1" diameter well was then installed with 6.0 feet of 0.02-inch slot PVC and 2.8' of PVC riser. A filter pack of No. 2 Filpro sand was then placed into the borehole to 1.0' bgs and a bentonite seal was placed to 0.3' bgs. Concrete was then placed over the seal to ground surface.						
L_CONSTRUCTION_SUMMARY		ent on 3/9/06 using a peristaltic	pump. The well went	dry after seven mir	nutes of pump	ing at 0.04 gal/min.	
ANGAN WELL	T. (0)	2:		1 7 (D. 150)			
- LAN	Type of Casing PVC	Diameter 1-inc	:h	Type of Backfill M Portland C			
t: Loc	Type of Screen	Diameter		Type of Seal Mate	erial		
eport	PVC	1-inc	ch	Bentonite			
Borehole Diameter Z" Type of Filter Material No. 2 Filpro Sand							
9 3:33:35	Top of Casing	Elevation 1,165.80'	Depth 0' bgs	We We	ell Details	Soil Classification	Depth (ft)
1/2/200	Top of Seal	Elevation 1,164.80'	Depth 1' bgs	G rou	ut	Concrete	-
.GPJ 1	Top of Filter	Elevation 1,164.80'	Depth 1' bgs	—	onite VC Riser	USCS Low Plasticity Gravelly Clay	
3 LOGS	Top of Screen	Elevation 1,164.00'	Depth 1.8' bgs				-
BORING	Bottom of Filter	Elevation 1,158.00'	Depth 7.8' bgs				_ 2
SVINDSPE	Bottom of Well	Elevation 1,158.00'	Depth 7.8' bgs			Concrete	-
P00	Screen Length	6.0'	Slot Size 0.02-inch			Concrete	— 3 -
PHILLY\OFFICE DATA\GINT	GRO	UNDWATER ELEVATI (Measured from the Top of Casi	ONS (ft)			Concrete	- - - 4
FICE D	Elevation 1164.15'	DTW 1.65'	Date 3/2/2006	No. i	2 Filpro		-
7\0	Elevation	DTW	Date		VC Screen		- - 5
爿	1165.75'	0.05'	3/3/2006				-
FROMF	Elevation 1160.18'	DTW 5.62'	Date 3/8/2006				F
	Elevation	5.62 DTW	3/6/2006 Date				- 6
1/DA							ļ.
256840	Elevation	DTW	Date			Concrete	7
Q:\DATA4\2568401\DATA	Elevation	DTW	Date			Weathered Sandstone	
Ö				: - :			



Well No. MW-75A

Well Permit No. N/A

			Well Fellill No. I
Project		Project No.	
	Beazer/INDSPEC Properties		2568412
Location		Elevation And Datum	
	Petrolia, Pennsylvania		1162.28 NAVD 1988
Drilling Agency		Date Started	Date Finished
	Pennsylvania Drilling Company	3/23/2006	3/23/2006
Drilling Equipme	ent	Driller	
	CME 45C Track Rig		Jim Lang
Size And Type of	of Bit	Inspector	
	4 1/4" ID Hollow Stem Auger		Dennis Webster

Method of Installation

Method of Well Development

5 4 1/4	ID Hollow Stem Au	y e i	1	Dennis wet	SICI
Method of Installation The borehole was first sampled with 2" OD by 2' long split spoons and augered with a 4.25' ID HSA to split spoon refusal at 21.6' bgs. A 2" diameter well was then installed to 19.8' bgs with 15.0' of 0.02-inch slot PVC and 4.65' of PVC riser. A filter pack of No. 2 Filpro sand was then placed into the borehole to 2.8' bgs and a bentonite seal was placed to 1.0' bgs. Concrete was then placed over the seal and a flushmount cover was installed.					
Method of Well Developm		ible whale pump. The	well had a depth to water of 3	.70' bgs after ten minutes of pumping at 2.0 (gal/min.
Type of Casing	Diameter		Type of Backfill Material		
PVC	2-ind	ch	Portland Cement		
Type of Screen PVC	Diameter 2-in o	ch	Type of Seal Material Bentonite		
Borehole Diameter	4.25	"	Type of Filter Material No. 2 Filpro Sand		
Top of Casing	Elevation 1,162.13'	Depth 0.2' bgs	Well Details	Soil Classification	Depth (ft)
Top of Seal	Elevation 1,161.28'	Depth 1' bgs	Grout	- Asphalt	1
Top of Filter	Elevation 1,159.48'	Depth 2.8' bgs	Bentonite −2" PVC Riser	Sand and Gravel (intermixed)	2
Top of Screen	Elevation 1,157.48'	Depth 4.8' bgs		Poorly-graded Gravel with some Sand	3 4
Bottom of Filter	Elevation 1,142.48'	Depth 19.8' bgs		Toony graded did on that come can	5
Bottom of Well	Elevation 1,142.52'	Depth 19.8' bgs		Sand and Gravel (intermixed)	6
Screen Length	15.0'	Slot Size 0.02-inch			8
GRO	OUNDWATER ELEVAT (Measured from the Top of Casi				9 10
Lievation	DTW 3.01'	Date 3/23/2006	No. 2 Filpro	SAND	11
Elevation 1158.43'	DTW 3.70'	Date 3/28/2006	2" PVC Screen	SAND	12
Elevation 1158.43'	DTW	Date		Sand with some gravel (has rounded fragments)	14
	DTW	Date			16
Elevation Elevation Elevation	DTW	Date		Weathered Sandstone	17
Elevation	DTW	Date		Weathered Sandstone	19



Well No. MW-76A

Well Permit No. N/A

		VVCII I CITIIL INO. IN/
Project	Project No.	
Beazer/INDSPEC Properties		2568412
Location	Elevation And Datum	
Petrolia, Pennsylvania		1161.92 NAVD 1988
Drilling Agency	Date Started	Date Finished
Pennsylvania Drilling Company	3/24/2006	3/24/2006
Drilling Equipment	Driller	•
CME 45C Track Rig		Jim Lang
Size And Type of Bit	Inspector	
4 1/4" ID Hollow Stem Auger		Dennis Webster

Method of Well Development

C C	CME 45C Track Rig			Jim Lang			
- TOIZE AND TYDE OF BIL	Size And Type of Bit			Inspector			
<u> </u>	1/4" ID Hollow Stem Aug	er		Dennis Webster			
Method of Installation The borehole was was then installed 3.0' bgs and a be	The borehole was first sampled with 2" OD by 2' long split spoons and augered with a 4.25' ID HSA to split spoon refusal at 21.0' bgs. A 2" diameter well was then installed to 20.0' bgs with 15.0' of 0.02-inch slot PVC and 5.0' of PVC riser. A filter pack of No. 2 Filpro sand was then placed into the borehole to 3.0' bgs and a bentonite seal was placed to 1.0' bgs. Concrete was then placed over the seal, and a flushmount cover was then installed.						
Method of Installation The borehole was was then installed a.0' bgs and a be Method of Well Devel Well was develop Type of Casing	•	ble whale pump. The	e well had a depth to	water of 1.35	5' bgs after ten minutes of pumping at 2.0 g	gal/min.	
Type of Casing PVC	Diameter 2-inc	h	Type of Backfill Ma				
Type of Screen	Diameter		Type of Seal Mate				
PVC	2-inc	h	Bentonite				
Borehole Diameter	4.25"		Type of Filter Mate				
Top of Casing	Elevation 1,161.67'	Depth 0.3' bgs	Well De	etails	Soil Classification	Depth (ft)	
70p of Seal	Elevation 1,160.92'	Depth 1' bgs			Asphalt	 	
Top of Filter	I, 100.92 Elevation	Depth	Grou	τ	Poorly-graded Gravel with some Sand	7	
	1,158.92'	3' bgs	Bent−2" P\	onite /C Riser		_ 2	
ပို့ Top of Screen	Elevation 1,156.92'	Depth 5' bgs				-	
Bottom of Filter	Elevation	Depth	그의 1의			<u> </u>	
Bottom of Filter	1,141.92'	20' bgs			Poorly-graded Gravel with some Sand	†	
Bottom of Well	Elevation	Depth				6	
DOILOTT OF WELL	1,141.90'	20' bgs			Sand and Gravel (intermixed)	-	
Screen Length		Slot Size				- - 8	
ON THE	15.0'	0.02-inch			Sand with some gravel (has rounded fragments)	- -	
G Elevation	GROUNDWATER ELEVATION (Measured from the Top of Casin	ONS (ft)			Weathered Sandstone Sand with some gravel (has rounded	10	
Elevation	DTW	Date			fragments)	F	
1158.82' Elevation 1160.32'	2.85'	3/24/2006	No. 2		SAND	- - 12	
Elevation	DTW	Date		/C Screen		- ·-	
뒾 1160.32'	1.35'	3/28/2006				F	
Elevation	DTW	Date			SAND	14	
	DTW	Date			USCS Silt SAND	16	
Elevation	DTW	Date			Weathered Sandstone	18	
Elevation Elevation Elevation	DTW	Date			Weathered Sandstone	-	



Well No. MW-77A

Well Permit No. N/A

		VVCII I CITIIL INO. IN/A
Project	Project No.	
Beazer/INDSPEC Properties		2568412
Location	Elevation And Datum	
Petrolia, Pennsylvania		1161.08 NAVD 1988
Drilling Agency	Date Started	Date Finished
Geo Environmental	4/4/2006	4/4/2006
Drilling Equipment	Driller	•
Truck Mounted Geoprobe Size And Type of Bit 3 1/4" ID Hollow Stem Auger		Joe Beck
Size And Type of Bit	Inspector	
	Ashley Edelma	an and Dennis Webster
Method of Installation		

Method of Well Development

Truck	Truck Mounted Geoprobe			Joe Beck			
·LOIZE AND TYDE OLDII			Inspector				
3 1/4	" ID Hollow Stem Au	ger		Ashley Edelman and Dennis Webster			
Method of Installation The borehole was first sampled with 2" OD by 4' long macrocores and augered with a 3.25' ID HSA to 10' bgs. A 2" diameter well was then installed to 10' bgs with 7' of 0.02-inch slot PVC and 3' of PVC riser. A filter pack of No. 4 Silicon sand was then placed into the borehole to 2.0' bgs and a bentonite seal was placed to 1.0' bgs. Concrete was then placed over the seal and a flushmount cover was then installed. Method of Well Development Well was developed on 4/5/06 using a centrifugal pump. The well has a depth to water of 2.66' bgs after 20 minutes of pumping at 0.5 gal/min.							
OCTIO							
Method of Well Developme			- 44-1	0.0011	00 miliotas et		
Well was developed of	on 4/5/06 using a centrifuga	Il pump. The well has	a depth to water of	2.66' bgs afte	er 20 minutes of pumping at 0.5 gal/min.		
Type of Casing							
NAS							
Type of Casing PVC	Diameter 2-inc	nh.	Type of Backfill Ma				
Type of Screen	Z-II IC	116	Type of Seal Mate				
PVC	2-inc	ch	Bentonite	iidi			
Borehole Diameter							
Md 8							
Top of Casing	Elevation 1,161.08'	Depth 0' bgs	Well De	etails	Soil Classification	Depth (ft)	
Top of Seal	Elevation 1,160.08'	Depth 1' bgs		nmount	Poorly-graded Gravel with some Sand		
Top of Filter	Elevation 1,159.08'	Depth	Grou	ιτ		- - - 1	
Top of Screen	Elevation	2' bgs Depth		/C Riser		ļ	
001	1,158.08'	3' bgs	Bent			_ 2	
Bottom of Filter	Elevation	Depth				 	
O	1,151.08'	10' bgs				3	
Bottom of Well	Elevation 1,151.09'	Depth 10' bgs			Poorly-graded Gravel with some Sand	_ ,	
Screen Length	.,	Slot Size				+	
1 10	7.0'	0.02-inch			USCS Silt	4	
GRO Elevation 1155.48' Elevation 1158.63' Elevation 1158.72'	UNDWATER ELEVATI (Measured from the Top of Casi	IONS (ft)				- - 5	
Elevation	DTW	Date			Sand and Gravel (intermixed)	‡	
1155.48'	5.6'	4/4/2006 Date		1 Silicon	, , ,	- 6	
1158.63'	2.45'	4/5/2006	Sand	I /C Screen	USCS Silt	+	
Elevation	DTW	Date				7	
	2.36'	4/20/2006				E	
Elevation	DTW	Date				- 8	
Elevation Elevation	DTW	Date				-	
Elevation Elevation	DTW	Date				<u> </u>	
ACI:C					Clayey Sand	7	
~ <u></u>			15 21 15 21		<u> </u>	1	



Well No. MW-78A

Well Permit No N/A

		Well Fellill No. IN/F
Project	Project No.	
Beazer/INDSPEC Properties		2568412
Location	Elevation And Datum	
Petrolia, Pennsylvania		1159.23 NAVD 1988
Drilling Agency	Date Started	Date Finished
Geo Environmental	4/4/2006	4/4/2006
Drilling Equipment	Driller	
Bobcat Mounted Geoprobe		Joe Beck
Size And Type of Bit A" OD, 60" Long, Stainless Steel Macrocare	Inspector	
4" OD, 60" Long, Stainless Steel Macrocore		Ashley E. / Dennis W.
Method of Installation	· · · · · · · · · · · · · · · · · · ·	·

GDT	Bobcat Mounted Geoprobe			Joe Beck				
	· LOIZE AND TYDE OLDII			Inspector				
PLA.	4" OD, 60" Long, Stainless Steel Macrocore			9	Ashley E. / Dennis W.			
CONSTRUCTION_SUMMARYTemplate TEMPLATE	Method of Installation 2" OD macrocores were advanced to 12' bgs and the soil was removed with 1" OD macrocores to allow for the installation of a well with 10' of 0.02-inch slot PVC screen and a 5' PVC riser. No. 4 Silicon sand was placed downhole as the macrocores were removed, and bentonite was placed to 0.25' bgs. Concrete was then placed over the seal to ground surface and a steel stick up cover was installed.							
	Method of Well Developme Well was developed o		l pump. The well had	a depth to water of	5.85' bgs afte	er 23 minutes of pumping at 0.2 gal/min.		
ANGAN_WELL								
1 - LANG	Type of Casing PVC	Diameter 1-in 0	 ch	Type of Backfill M Portland C				
port: Log	Type of Screen PVC	Diameter 1-ind	ch	Type of Seal Mate	erial			
PM Rep	Borehole Diameter Type of Filter Material							
9 3:34:13	Top of Casing	Elevation 1,162.23'	Depth 3' ags	W _E	W.Details	Soil Classification	Depth (ft)	
1/2/200	Top of Seal	Elevation 1,158.98'	Depth 0.3' bgs	Grou	ut	Poorly-graded Gravel with some Sand	-	
.GPJ 1	Top of Filter	Elevation 1,158.23'	Depth 1' bgs	- Bent	tonite		- - 1	
G LOGS	Top of Screen	Elevation 1,157.23'	Depth 2' bgs				_ 2	
BORIN	Bottom of Filter	Elevation 1,149.23'	Depth 10' bgs			Clay	+	
NDSPE	Bottom of Well	Elevation 1,149.23'	Depth 10' bgs			Sand and Gravel (intermixed)	3	
LOGS	Screen Length	8.0'	Slot Size 0.02-inch			Clay Silty sand some gravel	4 4	
FROM PHILLY\OFFICE DATA\GINT	GRO	UNDWATER ELEVAT (Measured from the Top of Casi				Silty sand some gravel	5	
FFICE D	Elevation 1161.06'	DTW 1.17'	Date 4/5/2006	San	4 Silicon d VC Screen		- - - 6	
∥LLY\0	Elevation 1158.25'	DTW 3.98'	Date 4/20/2006		VO OCICEII			
ROM PF	Elevation	DTW	Date			Clay	7	
	Elevation	DTW	Date				- - 8	
Q:\DATA4\2568401\DATA	Elevation	DTW	Date			Cond with some ground /har recorded	- - - - 9	
DATA4\	Elevation	DTW	Date			Sand with some gravel (has rounded fragments) Clay	+	
ö						Ciay	_	



Well No. MW-79A

Well Permit No. N/A

		VVCII I CITIIL INO. IN//
Project	Project No.	
Beazer/INDSPEC Properties		2568412
Location	Elevation And Datum	
Petrolia, Pennsylvania		1159.56 NAVD 1988
Drilling Agency	Date Started	Date Finished
Geo Environmental	4/5/2006	4/5/2006
Drilling Equipment	Driller	-
Bobcat Mounted Geoprobe		Joe Beck
Size And Type of Bit 2" OD 48" Long Stainless Steel Macrocore	Inspector	
2" OD, 48" Long, Stainless Steel Macrocore		Ashley Edelman
Mothed of Installation	•	· ·

Method of Well Development

Bobcat Mounted Geoprobe			Joe Beck			
Size And Type of Bit				Inspector		
[2" OD), 48" Long, Stainles	s Steel Macrocore)	Ashley Edelman		
macrocores were then PVC screen and a 5' F	advanced to 12' bgs. The	e soil was removed wit and was placed downho	n 1" OD macrocore	s to allow for es were remo	sed after removing macrocores. A 2" OD the installation of a well with 10' of 0.02-ind oved, and bentonite was placed to 0.25' bgs	ch slot s.
Mothod of Wall Davidonmo	unt.					
SAN_WELL_			·	Č	er eight minutes of pumping at 0.8 gal/min.	
Type of Casing PVC	Diameter 1-ind		Type of Backfill Ma			
Type of Screen PVC	Diameter 1-ino		Type of Seal Mate Bentonite	rial		
Borehole Diameter	Borehole Diameter Type of Filter Material No. 2 Filpro Sand					
Top of Casing	Elevation 1,162.56'	Depth 3' ags	 	l Details C Riser	Soil Classification	Depth (ft)
Top of Seal	Elevation 1,159.31'	Depth 0.3' bgs	Grou		Poorly-graded Gravel with some Sand	-
Top of Filter	Elevation 1,158.56'	Depth 1' bgs	— Bento	onite	Silty sand some gravel	1
Top of Screen	Elevation 1,157.56'	Depth 2' bgs				2
Bottom of Filter	Elevation 1,147.56'	Depth 12' bgs				3
Bottom of Well	Elevation 1,147.56'	Depth 12' bgs			Silty sand some gravel	4
Screen Length	10.0'	Slot Size 0.02-inch			USCS Silt	5
GROU Flevation	JNDWATER ELEVAT (Measured from the Top of Casi	IONS (ft)			USCS Poorly-graded Sandy Gravel USCS Silt	6
Elevation 1160.03'	DTW 2.53'	Date 4/5/2006	Sand	Silicon /C Screen	5555 5	7
1160.03' Elevation 1157.17'	DTW 5.39'	Date 4/20/2006				- - 8
Elevation	DTW	Date			USCS Silt	
	DTW	Date				— 9 - - -
Elevation	DTW	Date				— 10 - - -
Elevation	DTW	Date				— 11 - -



Well No. MW-80A

Well Permit No. N/A

		Well Permit No. N//
Project	Project No.	
Beazer/INDSPEC Properties		2568412
Location	Elevation And Datum	
Petrolia, Pennsylvania		1160.84 NAVD 1988
Drilling Agency	Date Started	Date Finished
Geo Environmental	4/5/2006	4/5/2006
Drilling Equipment	Driller	
Bobcat Mounted Geoprobe		Joe Beck
Size And Type of Bit 2" OD 48" Long Stainless Steel Macrocore	Inspector	
2" OD, 48" Long, Stainless Steel Macrocore		Ashley Edelman
Method of Installation	•	

Method of Installation 2" OD macrocores were advanced to 12' bgs and the soil was removed with 1" OD macrocores to allow for the installation of a well with 10' of 0.02-inch slot PVC screen and a 5' PVC riser. No. 4 Silicon sand was placed downhole as the macrocores were removed, and bentonite was placed to 0.25' bgs. Concrete was then placed over the seal to ground surface and a steel stick up cover was installed. Method of Well Development Well was developed on 4/5/06 using a centrifugal pump. The well had a depth to water of 5.03' bgs after 9 minutes of pumping at 1 gal/min.					
Method of Well Developm Well was developed of Type of Casing			a depth to water of 5.03' bgs aft	eer 9 minutes of pumping at 1 gal/min.	
PVC	1-inc		Portland Cement		
Type of Screen PVC	Diameter 1-ind	ch	Type of Seal Material Bentonite		
Borehole Diameter	2"		Type of Filter Material No. 2 Filpro Sand		
Top of Casing	Elevation 1,163.84'	Depth 3' ags	Well Details	Soil Classification	Dep (ft
Top of Seal	Elevation 1,160.59'	Depth 0.3' bgs	Grout	Gravel	E
Top of Filter	Elevation 1,159.84'	Depth 1' bgs	— Bentonite	Sand with some gravel (has rounded	1
Top of Screen	Elevation 1,158.84'	Depth 2' bgs		fragments)	_ 2
Bottom of Filter	Elevation 1,148.84'	Depth 12' bgs			3
Bottom of Well	Elevation 1,148.84'	Depth 12' bgs		Sand and Gravel (intermixed)	4
Screen Length	10.0'	Slot Size 0.02-inch			5
GRO	OUNDWATER ELEVAT (Measured from the Top of Casi	IONS (ft)			- 6
Elevation 1161.65'	DTW 2.19'	Date 4/5/2006	-No. 4 Silicon Sand 1" PVC Screen		7
Elevation 1158.59'	DTW 5.25'	Date 4/20/2006			8
Elevation	DTW	Date		Sand and Gravel (intermixed)	9
Elevation	DTW	Date			-
Elevation	DTW	Date			10
Elevation	DTW	Date			- 11 -



Well No. BH-08-27/MPZ-01A/B Well Permit No. N/A

Project		Project No.	
	Beazer/INDSPEC Properties		2568412
Location		Elevation And Datum	
	Petrolia, Pennsylvania	115	59.300072 NAVD 1988
Drilling Agency		Date Started	Date Finished
	Pennsylvania Drilling	4/15/08	4/15/08
Drilling Equipme	ent	Driller	•
	CME 45 Track Rig		Jim Lang
Size And Type	of Bit	Inspector	
j	2 7/8" OD Roller Bit		Bobby Huff
monitoring v PVC riser to feet bgs. A (MPZ-01A). pack of No. O.D. protect	ole was advanced using a 3.5" temporary steel casing and 2 7/8" roller levells was then installed. The first, deep well (MPZ-01B) consisted of 2 o 3 ft. ags. A deep filter pack of No. 3 sand was placed in the borehole A shallow filter pack of No. 3 sand was placed in the borehole to 7.5 fee. MPZ-01A consisted of 2 feet of .020-inch slot PVC well screen set a 3 sand was continued to 5.0 feet. A shallow bentonite seal was then titve steel stick-up, placed over the wells and driven to 2.0 feet bgs.	2 feet of 0.020-inch slot PVC well screer to 13.5 feet. A deep bentonite seal was et. A second, shallow 1-inch PVC monit t 7.5 feet bgs with ~8.5 feet of PVC rise	set at 16 feet bgs with 17 feet of sthen placed from 13.5 feet to 8.0 bring well was then installed to 3 ft. ags. The second filter
Method of Well	·	0.05	45
MIPZ-01A: V	Well was developed on 4/30/08 by pumping with a peristaltic pump at itial purge water was dark brown with sediment. After 1 gal purge, colo		

Method of Installation

Method of Well Development

MPZ-01A: Well was developed on 4/30/08 by pumping with a peristaltic pump at 0.25 gallons per minute. A total of 3 gallons were purged over 15 minutes. Initial purge water was dark brown with sediment. After 1 gal purge, color changed to reddish-brown w/ a strong odor and less sediments observed. After 2 gallons, color changed to light-reddish brown w/ a strong odor and trace sediments observed. MPZ-01B: Well was developed on 4/30/08 by pumping with a peristaltic pump at 0.30 gallons per minute. A total of 4 gallons were purged over 12

MPZ-01B: Well was	developed on 4/30/08 by p	umping with a peristalti	ong odor and trace sediments of c pump at 0.30 gallons per minu . After 2.25 gal purge, water cle	te. A total of 4 gallons were purged ove	r 12
Type of Casing	Diameter		Type of Backfill Material		
Steel/PVC	4.5-	inch/1-inch	Bentonite		
Type of Screen	Diameter	•	Type of Seal Material		
PVC	1-in	ch	Bentonite		
Borehole Diameter	3.5"		Type of Filter Material No. 3 Filpro Sand		
Top of Casing	Elevation	Depth	140. 01 lipro caria		
top of Casing	1,162.30'	3' ags	Well Details	Soil Classification	Depth (ft)
Top of Seal	Elevation	Depth		USCS Well-graded Sandy Gravel	
/2/1	1,159.30'	0' bgs		0303 Well-gladed Salidy Glavel	E
Top of Filter	Elevation	Depth	─1" PVC Risers		E 1
GPJ	1,154.30'	5' bgs			_ 2
Top of Screen	Elevation	Depth	— ■ Bentonite	Sand with some silt and gravel	E 2
2	1,153.80'	5.5' bgs			_ 3
Bottom of Filter	Elevation	Depth			E
					4
Bottom of Well	Elevation	Depth			<u> </u>
Screen Length	1,143.30'	16' bgs			E
Screen Length	·	Slot Size	-} : : :	Sand with some silt and gravel	 6
O Cleen Length		0.02-inch	MPZ-01A 1"	Sand with some silt and graver	Ė
<u>-</u>			PVC Screen		- 7
Elevation 1160.91' Elevation 1161.05'	OUNDWATER ELEVAT (Measured from the Top of Cas		No. 3 Filter	USCS Silt	8
Elevation	DTW	Date			- 9
呈 1160.91'	1.39'	4/15/2008			Ė
Elevation	DTW	Date			E 10
1161.05'	1.25'	4/30/2008	<-Bentonite		E
	DTW	Date	Delitorite		E 11
Elevation					E - 12
±	DTW	Date			E 12
₽Q					E 13
Elevation	DTW	Date			E
52200	5.11	24.0	Sand		- 14
Elevation	DTW	Date	H MPZ-01B		E - 15
	DIVV	Date	1"PVC Screen		F 15



Well No. BH-08-28/MPZ-02A/B Well Permit No. N/A

Project	D (NDODEO D);	Project No.	0500440	
	Beazer/INDSPEC Properties		2568412	
Location		Elevation And Datum		
	Petrolia, Pennsylvania	115	59.326319 NAVD 1988	
Drilling Agency		Date Started	Date Finished	
	Pennsylvania Drilling	4/16/08	4/16/08	
Drilling Equipme		Driller	•	
	CME 45 Track Rig		Jim Lang	
Size And Type of		Inspector		
	2 7/8" OD Roller Bit		Bobby Huff	
Method of Installation The borehole was advanced using a 3.5" temporary steel casing and 2 7/8" roller bit to top of weathered bedrock. The first of two nested 1-inch PVC monitoring wells was then installed. The first, deep well (MPZ-02B) consisted of 2 feet of 0.020-inch slot PVC well screen set at 16 feet bgs with 17 feet PVC riser to 3 ft. ags. A deep filter pack of No. 3 sand was placed in the borehole to 13.5 feet. A deep bentonite seal was then placed from 13.5 feet to feet bgs. A shallow filter pack of No. 3 sand was placed in the borehole to 4.0 feet. A second, shallow 1-inch PVC monitoring well was then installed (MPZ-02A). MPZ-02A consisted of 2 feet of .020-inch slot PVC well screen set at 4.0 feet bgs with ~5 feet of PVC riser to 3 ft. ags. The second filter p of No. 3 sand was continued to 1.5 feet. A shallow bentonite seal was then placed from 1.5 feet to the surface. The wells were finished with a 3.5" O.D PVC casing to 1" bgs and a 4.5" O.D. protective steel stick-up, placed over the wells and PVC casing and driven to 1.3 feet bgs. Method of Well Development Method of Well was developed on 4/30/08 by pumping with a peristaltic pump at 0.20 gallons per minute. A total of 1.3 gallons were purged over 20 minutes. Well ran day after 0.85 gall purge. Allow 10 minute recharge. Well ran day a second time after additional, 0.25 gall purge. Purge water dark or				
Method of Well I MPZ-02A: W	Vell was developed on 4/30/08 by pumping with a peristaltic pump at 0.20 g	allons per minute. A total of 1.3 ga	allons were purged over 20	
minutes W	ell ran dry after 0.85 gal purge. Allow 10 minute recharge. Well ran dry a s			

Method of Installation

Method of Well Development

MPZ-02A: Well was developed on 4/30/08 by pumping with a peristaltic pump at 0.20 gallons per minute. A total of 1.3 gallons were purged over 20 minutes. Well ran dry after 0.85 gal purge. Allow 10 minute recharge. Well ran dry a second time after additioanl 0.25 gal. purge. Purge water dark gray

MPZ-02B: Well was developed on 4/30/08 by pumping with a peristaltic pump at 0.30 gallons per minute. A total of 4 .25 gallons were purged over 15 minutes. Initial purge water was light gray w/slgiht odor and trace sediments. Water cleared after 2.5 gal purge.

Type of Casing Steel/PVC	Diameter		Type of Backfill Material	F-1.9-1	
Steel/PVC	4.5-inch/1-inch		Bentonite		
Type of Screen PVC	Diameter		Type of Seal Material Bentonite		
S PVC	1-inch		1		
: Borenole Diameter	3.5"		Type of Filter Material No. 3 Filpro Sand		
Top of Casing	Elevation 1,162.33'	Depth 3' ags	Well Details	Soil Classification	Depth (ft)
Top of Casing Top of Seal Top of Seal	Elevation 1,159.33'	Depth 0' bgs	1"PVC Risers Bentonite		<u> </u>
: Top of Filter	Elevation 1,157.83'	Depth 1.5' bgs			- 1 - - - 2
Top of Screen	Elevation 1,157.33'	Depth 2' bgs	MPZ-02A 1"		3
Bottom of Filter	Elevation	Depth	No. 3 Filter		E 4
Bottom of Well	Elevation 1,143.33'	Depth 16' bgs	Sand		<u> </u>
Screen Length		Slot Size 0.02-inch			- 6 - - 7
GROUNDWATER ELEVATIONS (ft) (Measured from the Top of Casing)					E 8
Elevation	DTW	Date	<-Bentonite		9
Elevation	DTW	Date			10
Elevation	DTW	Date			— 11 — — — 12
Elevation	DTW	Date			13
Top of Screen Top of Screen Top of Screen Bottom of Filter Bottom of Well Screen Length GRC Elevation Elevation Elevation Elevation Elevation Elevation	DTW	Date	No. 3 Filter Sand		- - 14
Elevation	DTW	Date	MPZ-02B 1" PVC Screen		15



Well No. BH-08-29/MPZ-03A/B Well Permit No. N/A

Project Project Project Project	Project No.	2560442
Beazer/INDSPEC Properties		2568412
Location	Elevation And Datum	
Petrolia, Pennsylvania		1160.46 NAVD 1988
Drilling Agency	Date Started	Date Finished
Pennsylvania Drilling	4/15/08	4/17/08
Drilling Equipment	Driller	-
CME 45 Track Rig		Jim Lang
Size And Type of Bit 2 7/8" OD Roller Bit	Inspector	
	Bob	bby Huff / Kristen Ward
Method of Installation The borehole was advanced using a 3.5" temporary steel casing and 2 7/8" roller bit to PVC monitoring wells was then installed. The first, deep well (MPZ-03B) consisted of 2 feet of PVC riser to 3 ft. ags. A deep filter pack of No. 3 sand was placed in the borehol feet to 4.5 feet bgs. A shallow filter pack of No. 3 sand was placed in the borehole to 4 installed (MPZ-03A). MPZ-03A consisted of 2 feet of .020-inch slot PVC well screen se filter pack of No. 3 sand was continued to 1.5 feet. A shallow bentonite seal was then p 3.5" O.D. PVC casing to 1.0' bgs and a 4.5" O.D. protective steel stick-up (3.5' ags), pla Method of Well Development MPZ-03A: Well was developed on 4/30/08 by pumping with a peristaltic pump at 0.20 graphytes. Well ran dov after 0.75 gal purge. Allow 10 minute recharge. Well ran dov a second content of the protection	2 feet of 0.020-inch slot PVC well so le to 13.5 feet. A deep bentonite so .0 feet. A second, shallow 1-inch F et at 4.0 feet bgs with ~5 feet of PV blaced from 1.5 feet to the surface.	creen set at 16 feet bgs with 17 eal was then placed from 13.5 PVC monitoring well was then /C riser to 3 ft. ags. The second The wells were finished with a
Method of Well Development		
MPZ-03A: Well was developed on 4/30/08 by pumping with a peristaltic pump at 0.20 g minutes. Well ran dry after 0.75 gal purge. Allow 10 minute recharge. Well ran dry after 0.75 gal purge.		

Method of Well Development

MPZ-03A: Well was developed on 4/30/08 by pumping with a peristaltic pump at 0.20 gallons per minute. A total of 1.0 gallons were purged over 23 minutes. Well ran dry after 0.75 gal purge. Allow 10 minute recharge. Well ran dry a second time after additioant 0.25 gal. purge. Purge water light gray

MPZ-03B: Well was developed on 4/30/08 by pumping with a peristaltic pump at 0.30 gallons per minute. A total of 4.50 gallons were purged over 21 minutes. Initial purge water was light gray w/slgiht odor and trace sediments. Odor lessened, water cleared after 1.5 gal. purge.

<u>ال</u> ا	Type of Casing	Diameter	adi ana trace sea	Type of Backfill Material	
Report: Log - LANGAN	Steel/PVC		n/1-inch	Bentonite	
힑.	Type of Screen	Diameter	1/ 1 111011	Type of Seal Material	
ij	PVC	1-inch		Bentonite	
影	Borehole Diameter			Type of Filter Material	
.: ˈ ≥	Dorenole Diameter	3.5"		No. 3 Filpro Sand	
4 F	Top of Casing	Elevation	Depth		D 11
11/2/2009 3:34:44 PM	. op or odomig	1,163.46'	3' ags	Well Details Soil Classification	Depth (ft)
500Z	Top of Seal	Elevation	Depth	1" PVC Risers	
11/2		1,160.46'	0' bgs	■ Bentonite	Ė.
:[Top of Filter	Elevation	Depth		<u> </u>
GP.		1,158.96'	1.5' bgs		_ 2
89	Top of Screen	Elevation	Depth		Ę I
2		1,158.46'	2' bgs		- 3
	Bottom of Filter	Elevation	Depth		<u> </u>
ŏ O				Sand	ŧ
SPE	Bottom of Well	Elevation	Depth	Sanu	<u> </u>
킱		1,144.46'	16' bgs		Ē a
Sel	Screen Length		Slot Size		- 6
]			0.02-inch		E 7
Q:\DATA4\2568401\DATA FROM PHILLY\OFFICE DATA\GINT LOGS\INDSPEC BORING LOGS\GPJ		GROUNDWATER ELEVATION (Measured from the Top of Casing)	IS (ft)		<u>-</u> 8
	Elevation	DTW	Date		<u> </u>
띪				- Demonite	E
욁	Elevation	DTW	Date		_ 10
₹L					F 44
Ĭ	Elevation	DTW	Date		— 11 E
띪					_ 12
ATA I	Elevation	DTW	Date		<u> </u>
5					<u> </u>
1/25684	Elevation	DTW	Date	No. 3 Filter Sand	<u>-</u> 14
DATA4	Elevation	DTW	Date	MPZ-03B 1"PVC Screen	E 15
äĹ					-



Well No. BH-08-30/MPZ-04A/B Well Permit No. N/A

Project		Project No.	
	Beazer/INDSPEC Properties		2568412
Location		Elevation And Datum	
	Petrolia, Pennsylvania	115	9.979825 NAVD 1988
Drilling Agency	,	Date Started	Date Finished
	Pennsylvania Drilling	4/17/2008	4/17/2008
Drilling Equipme		Driller	
	CME 45 Track Rig		Jim Lang
Size And Type	of Bit	Inspector	
i	2 7/8" OD Roller Bit	Kristen V	Ward/ Dennis Webster
12.5. ft. The well screen bentonite se 1-inch PVC feet of PVC surface. The casing and	ole was advanced using a 3.5" temporary steel casing and 2 7/8" roller bit to be first of two nested 1-inch PVC monitoring wells was then installed. The first set at 12 feet bgs with ~13 feet of PVC riser to 3 ft. ags. A deep filter pack of earl was then placed from 9.5 feet to 7.5 feet bgs. A shallow filter pack of Nc monitoring well was then installed (MPZ-04A). MPZ-04A consisted of 2 feet is riser to 3 ft. ags. The second filter pack of No. 3 sand was continued to 2.0 he wells were finished with a 3.5" O.D. PVC casing to 1.0' bgs and a 4.5" O.D. driven to 3.0 feet bgs.	st, deep well (MPZ-04B) consisted of No. 3 sand was placed in the boro. 3 sand was placed in the boreholet of .020-inch slot PVC well screen feet. A shallow bentonite seal was	of 2 feet of 0.020-inch slot PVC rehole to 9.5 feet. A deep e to 7.0 feet. A second, shallow a set at 4.5 feet bgs with ~5.5 is then placed from 2.0 feet to the
Method of Well	Development Well was developed on 4/30/08 by pumping with a peristaltic pump at 0.40 c	uallons per minute A total of 5.0 ga	llons were purged over 17
minutes. Ir	nitial purge water light brown w/ sediment, purge water cleared after 2.0 gallo		none were parged over 17

Method of Well Development

MPZ-04A: Well was developed on 4/30/08 by pumping with a peristaltic pump at 0.40 gallons per minute. A total of 5.0 gallons were purged over 17 minutes. Initial purge water light brown w/ sediment, purge water cleared after 2.0 gallons.

MPZ-04B: Well was developed on 4/30/08 by pumping with a peristaltic pump at 0.25 gallons per minute. A total of 2.80 gallons were purged over 15 minutes. Initial purge water was light gray w/ an odor. Well went dry after 2.0 gal. purged. Allowed 10 minutes recharge. Well ran dry second time after

z 0.3 gal. purge.					
O.3 gal. purge. Type of Casing Steel/PVC Type of Screen PVC Borehole Diameter	Diameter		Type of Backfill Material		
Steel/PVC	4.5-	inch/1-inch	Bentonite		
Type of Screen	Diameter		Type of Seal Material		
FVC	1-in	ch	Bentonite		
Borehole Diameter			Type of Filter Material		
Top of Casing	3.5"		No. 3 Filpro Sand		
Top of Casing	Elevation	Depth	- MARIE DATE	0.100.000000000000000000000000000000000	Depth
6.0	1,162.98'	3' ags	Well Details	Soil Classification	(ft)
Top of Seal	Elevation	Depth		SAND	
	1,159.98'	0' bgs	—1" PVC Risers	SAND	E
: Top of Filter	Elevation	Depth			1
	1,155.48'	4.5' bgs			Ė
Top of Screen	Elevation	Depth			
	1,154.98'	5' bgs	■ Bentonite	CLAY	ļ -
Bottom of Filter	Elevation	Depth			3
	1,147.48'	12.5' bgs			<u> </u>
Bottom of Well	Elevation	Depth			4
	1,147.48'	12.5' bgs		SILTY SAND	*
Screen Length		Slot Size	TA A A		5
		0.02-inch		CLAY	
			TITO	SILTY SAND	
GRO	OUNDWATER ELEVAT (Measured from the Top of Cas	IONS (ft)	MPZ-04A 1" PVC Screen	SILIT SAND	- 6
Elevation	DTW	Date			<u> </u>
			No. 3 Filter		7
Elevation	DTW	Date	Sand		E
					- 8
Elevation	DTW	Date	— Bentonite		E
2				CLAY	9
Elevation	DTW	Date	<u> </u>		<u>F</u>
		- ,-		SILTY SAND	10
Elevation	DTW	Date	No. 3 Filter		Ė
000		24.0	∵		11
Elevation	DTW	Date	MPZ-04B 1" PVC Screen		F
Top of Screen Bottom of Filter Bottom of Well Screen Length GRC Elevation Elevation Elevation Elevation Elevation Elevation Elevation	5111	24.0			12
از			<u> </u>		-



Well No. BH-08-32/MPZ-05A/B Well Permit No. N/A

		770111 O11111C140.1477
Project	Project No.	
Beazer/INDSPEC Properties		2568412
Location	Elevation And Datum	
Petrolia, Pennsylvania	115	9.937054 NAVD 1988
Drilling Agency	Date Started	Date Finished
Pennsylvania Drilling	4/21/2008	4/21/2008
Drilling Equipment	Driller	•
CME 45 Track Rig		Jim Lang
Size And Type of Bit	Inspector	
2 7/8" OD Roller Bit	Bob	by Huff / Kristen Ward
The borehole was advanced using a 3.5" temporary steel casing and 2 7/8" roller bit to was then installed. The first, deep well (MPZ-05B) consisted of 2 feet of 0.020-inch slot ft. ags. A deep filter pack of No. 3 sand was placed in the borehole to 7.5 feet bgs. A c shallow filter pack of No. 3 sand was placed in the borehole to 4.0 feet. A second, shal MPZ-04A consisted of 2 feet of .020-inch slot PVC well screen set at 4.0 feet bgs with sand was continued to 1.5 feet. A shallow bentonite seal was then placed from 1.5 feet casing to 1.0' bgs and a 4.5" O.D. protective steel stick-up (3.0' ags), placed over the well stick-up (3.0' ags), placed over the well stick-up (3.0' ags).	of PVC well screen set at 10 feet by deep bentonite seal was then placed low 1-inch PVC monitoring well was ~5.0 feet of PVC riser to 3 ft. ags. t to the surface. The wells were fini	s with ~11 feet of PVC riser to 3 I from 7.5 feet to 4.5 feet bgs. A is then installed (MPZ-05A). The second filter pack of No. 3 shed with a 3.5" O.D. PVC
Method of Well Development		
MPZ-05A: Well was developed on 4/30/08 by pumping with a peristaltic pump at 0.25 g	gallons per minute. A total of 1.40 c	allons were nurged over 18

Method of Well Development

MPZ-05A: Well was developed on 4/30/08 by pumping with a peristaltic pump at 0.25 gallons per minute. A total of 1.40 gallons were purged over 18 minutes. Initial purge water light brown w/ strong odor. Well ran dry after 1.05 gal purged. Allow 10 min. recharge. Well ran dry again after 0.3 gal, terminated development.

Type of Casing Steel/PVC	Diameter 4.5-inch/1-inch		Type of Backfill Material Bentonite		
Type of Screen	Diameter		Type of Seal Material		
PVC	1-in	ch	Bentonite		
Borehole Diameter	3.5"		Type of Filter Material No. 3 Filpro Sand		
Top of Casing	Elevation 1,162.94'	Depth 3' ags	Well Details	Soil Classification	Depth (ft)
Top of Seal	Elevation 1,159.94'	Depth 0' bgs		SAND	<u> </u>
Top of Filter	Elevation 1,158.44'	Depth 1.5' bgs	4-1" PVC Risers Bentonite	SAND	1
Top of Screen	Elevation 1,157.94'	Depth 2' bgs			2
Bottom of Filter	Elevation	Depth		CLAY	Ė
Bottom of Well	Elevation 1,149.94'	Depth 10' bgs	MPZ-05A 1" PVC Screen	CLAY	3
Screen Length		Slot Size 0.02-inch	No. 3 Filter	SAND	4
	UNDWATER ELEVAT (Measured from the Top of Cas	sing) `´	Janu		_ _ 5
Elevation	DTW	Date	⊸ Bentonite		- 6
Elevation	DTW	Date	Demonite	CLAY	-
Elevation	DTW	Date		CLAY	7
Elevation	DTW	Date		CLAY	- 8
Elevation	DTW	Date	— No. 3 Filter Sand		- - - - 9
Elevation	DTW	Date	MPZ-05B 1" PVC Screen		-



Well No. BH-08-39/MPZ-06

Well Permit No. N/A

			**CILL CITILL 140. 14// (
Project		Project No.	
	Beazer/INDSPEC Properties		2568412
Location		Elevation And Datum	
	Petrolia, Pennsylvania		1160.46 NAVD 1988
Drilling Agency		Date Started	Date Finished
	Pennsylvania Drilling	4/25/2008	4/25/2008
Drilling Equipme	nt	Driller	
	Acker Scout Track Rig		Jim Lang
Size And Type o	f Bit	Inspector	
Size And Type o	2 7/8" OD Roller Bit	Bob	bby Huff / Kristen Ward

Method of Well Development

Method of Installation The borehole was adv 10.5' bgs. The hole w of 0.020-inch slot PVC bgs. A bentonite seal	OD Roller Bit				Bobby Hull / Kriste	n vvard			
Method of Installation The borehole was advanced using a 3.5" temporary steel casing and 2 7/8" roller bit to 18.6 ft. bgs. The borehole was backfilled with bentonite pellets to 10.5' bgs. The hole was then backfilled with No. 3 filter sand to 10.0 ft. bgs. A 1-inch PVC monitoring well was then installed. The well consisted of 4 feet of 0.020-inch slot PVC well screen set at 10 feet bgs with ~9 feet of PVC riser to 3 ft. ags. A filter pack of No. 3 sand was placed in the borehole to 7.5 feet bgs. A bentonite seal was then placed from 7.5 feet to the surface. The well was finished with a 3.0" O.D. protective steel stick-up casing, placed over the wells and driven to 3.0 feet bgs, with approx. 3.0 ft. stick-up.									
Mothod of Wall Davids	unt .								
Method of Well Developme MPZ-06: Well was dev minutes. Initial purge		mping with a peristaltic nents and an odor. Go	pump at 0.35 gallor od recharge.	ns per minute	e. A total of 7.0 gallons were purged ov	er 21			
Type of Casing	Diameter		Type of Backfill Ma	aterial					
Steel/PVC		inch/1-inch	Bentonite	-					
Type of Screen	Diameter		Type of Seal Mate	rial					
PVC	1-ind	ch	Bentonite						
Borehole Diameter			Type of Filter Mate						
	3.5"		No. 3 Filpro	Sand					
Top of Casing	Elevation	Depth	Wel	l Details	Soil Classification	Depth (ft)			
Top of Seal	Elevation 1,160.46'	Depth 0' bgs			SILTY SAND	-			
Top of Filter	Elevation 1,154.96'	Depth 5.5' bgs	- -1" P\	/C Riser		- 1			
Top of Screen	Elevation 1,154.46'	Depth 6' bgs			SAND	2			
Bottom of Filter	Elevation 1,149.96'	Depth 10.5' bgs	⋖ -Bento	onite	SAND				
Bottom of Well	Elevation 1,149.96'	Depth 10.5' bgs Slot Size			SAIND	- 4			
	4.0'	0.02-inch			SAND	- - - - - 5			
₹ GROI	UNDWATER ELEVAT (Measured from the Top of Casi					ļ ,			
H Lievation	DTW	Date				- 6			
Elevation	DTW	Date				- - - 7			
	DTW	Date	No. 3			- 8			
Elevation	DTW	Date		/C Screen		Ė			
Elevation Elevation	DTW	Date				- - 9 -			
Elevation	DTW	Date			SAND	- - 10			



Well No. BH-08-41/ MPZ-07A/B Permit No. N/A

	Weill elllit No. N
Project Beazer/INDSPEC Properties	Project No. 2568412
Location Petrolia, Pennsylvania	Elevation And Datum 1165.741714 NAVD 1988
Drilling Agency Pennsylvania Drilling	Date Started
Drilling Equipment Minute Man Portable Drill	Driller Jim Lang
Size And Type of Bit 3 3/4" OD Diamond / 2" Thinwall Diamond / 2 7/8"	" Roller Bit Dennis Webster / Bobby Huff
Method of Installation The borehole was advanced using a 3.5" temporary steel casing and 2 7/8" rolls was then installed. The first, deep well (MPZ-07B) consisted of 2 feet of 0.020-1.92 ft. ags. A deep filter pack of No. 3 sand was placed in the borehole to 19.3 bgs. A shallow filter pack of No. 3 sand was placed in the borehole to 8.0 feet.	-inch slot PVC well screen set at 22.0 feet bgs with \sim 21 feet of PVC riser to 3 feet bgs. A deep bentonite seal was then placed from 19.3 feet to 8.5 feet

CONSTRUCTION SUMMARY.

The borehole was advanced using a 3.5" temporary steel casing and 2 7/8" roller bit to 22.2 ft. bgs. The first of two nested 1-inch PVC monitoring wells was then installed. The first, deep well (MPZ-07B) consisted of 2 feet of 0.020-inch slot PVC well screen set at 22.0 feet bgs with ~21 feet of PVC riser to 1.92 ft. ags. A deep filter pack of No. 3 sand was placed in the borehole to 19.3 feet bgs. A deep bentonite seal was then placed from 19.3 feet to 8.5 feet bgs. A shallow filter pack of No. 3 sand was placed in the borehole to 8.0 feet. A second, shallow 1-inch PVC monitoring well was then installed (MPZ-07A). MPZ-07A consisted of 2 feet of .020-inch slot PVC well screen set at 8.0 feet bgs with ~7.0 feet of PVC riser to 1.19 ft. ags. The second filter pack of No. 3 sand was continued to 5.2 feet. A shallow bentonite seal was then placed from 5.2 feet to 2.0'. The borehole was then backfilled with cement from 2.0 ft. to the surface.

Method of Well Development

MPZ-07A: Well was developed on 4/30/08 using a peristaltic pump pumping at 0.25 gal per minute. A total of 2.0 gallons were purged over 13 minutes. Grey-black purge water with sheen, odor, and silt. Recharge rate: 0.1 ft/20 sec. MPZ-07B: Well was developed on 4/30/08 using a peristaltic pump pumping at 0.50 gal per minute. A total of 4.5 gal were purged over 15 minutes.

Type of Casing Steel/PVC	Diameter 4.5-	inch/1-inch	Type of Backfill Material Bentonite		
Type of Screen PVC	Diameter 1-in		Type of Seal Material Bentonite		
Borehole Diameter	3.5"		Type of Filter Material No. 3 Filpro Sand		
Top of Casing	Elevation 1,168.74'	Depth 3' ags	Well Details	Soil Classification	Depth (ft)
Top of Seal	Elevation 1,163.74'	Depth 2' bgs	1" PVC Risers	Concrete	-
Top of Filter	Elevation 1,160.54'	Depth 5.2' bgs	Cement		<u> </u>
Top of Screen	Elevation 1,159.74'	Depth 6' bgs	—-Bentonite		- 4
Bottom of Filter	Elevation	Depth		USCS Silty Sand	
Bottom of Well	Elevation 1,143.74'	Depth 22' bgs	MPZ-07A 1" PVC Screen	COCC Only Cand	- - - - 8
Screen Length		Slot Size 0.02-inch	─────────────────────────────────────	Sand with some gravel	-
GRO	UNDWATER ELEVAT (Measured from the Top of Cas	TONS (ft)			10
Elevation	DTW	Date			12
Elevation	DTW	Date	——Bentonite	Sand with some gravel	- - 14 -
Elevation	DTW	Date		USCS Silty Sand	16
Elevation	DTW	Date		USCS Silty Sand	
Elevation	DTW	Date			20
Elevation	DTW	Date	Sand MPZ-07B 1" PVC Screen		



Well No. BH-08-42/MPZ-08A/B Well Permit No. N/A

Project	Project No.	
Beazer/INDSPEC Properties		2568412
Location	Elevation And Datum	
Petrolia, Pennsylvania		1165.79 NAVD 1988
Drilling Agency	Date Started	Date Finished
Pennsylvania Drilling	5/2/2008	5/6/2008
Drilling Equipment	Driller	•
Minute Man Portable Drill		Jim Lang
Size And Type of Bit	Inspector	
3 3/4" OD Diamond / 2" Thinwall Diamond / 2 7/8" Roller E	it Dennis	Webster / Bobby Huff

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CONSTRUCTION SUMMARY.

The borehole was advanced using a 3.5" temporary steel casing and 2 7/8" roller bit to 23.5 ft. bgs. The first of two nested 1-inch PVC monitoring wells was then installed. The first, deep well (MPZ-08B) consisted of 2 feet of 0.020-inch slot PVC well screen set at 22.5 feet bgs with ~21.5 feet of PVC riser to 1 ft. ags. A deep filter pack of No. 3 sand was placed in the borehole to 20 feet bgs. A deep bentonite seal was then placed from 20 feet to 10.5 feet bgs. A shallow filter pack of No. 3 sand was placed in the borehole to 10.0 feet. A second, shallow 1-inch PVC monitoring well was then installed (MPZ-08A). MPZ-08A consisted of 2 feet of .020-inch slot PVC well screen set at 10.0 feet bgs with ~9.0 feet of PVC riser to 1 ft. ags. The second filter pack of No. 3 sand was continued to 7.5 feet. A shallow bentonite seal was then placed from 7.5 feet to 2.0'. The borehole was then backfilled with cement from 2.0 ft. to the surface.

Method of Well Development

MPZ-08A: Well was developed on 5/07/08 using a peristaltic pump pumping at 0.25 gal per minute. A total of 3.50 gal were purged over 18 minutes. Initial purge water was developed on 5/07/08 using a peristalite pump pumping at 0.25 gal per minute. A total of 5.50 gal were purged over 16 minutes. Initial purge water was dark gray and heavy with silt / sediment. After a 1.0 gal purge, water changed color to reddish-brown and had a very strong odor. MPZ-08B: Well was developed on 5/07/08 using a peristaltic pump pumping at 0.25 gal per minute. A total of 5.0 gal were purged over 23 minutes. Initial purge water was light gray with a slight odor. Purge water cleared and had a slight odor after 2.0 gal.

Type of Casing					
Type of Casing	Diameter		Type of Backfill Material		
Steel/PVC	4.5-	inch/1-inch	Bentonite		
Type of Screen	Diameter	r	Type of Seal Material		
PVC	1-in	ch	Bentonite		
Borehole Diameter			Type of Filter Material		
MA M	3.5"		No. 3 Filpro Sand		
Top of Casing	Elevation	Depth	· ·		Donth
3:35	1,168.79'	3' ags	Well Details	Soil Classification	Depth (ft)
Top of Seal	Elevation	Depth		Connecte	
1/2/;	1,163.79'	2' bgs	1" PVC Risers Portland	USCS Poorly-graded Gravelly Sand	
: Top of Filter	Elevation	Depth	Cement	USCS Clayey Gravel	-
GPJ	1,158.29'	7.5' bgs		0	_ 2
Top of Screen	Elevation	Depth		Concrete	Ł
의 ·	1,157.79'	8' bgs			- 4
인 Bottom of Filter	Elevation	Depth	— Bentonite		F
Bottom of Filter	2.0700011	2004.			- 6
O	Elevation	Depth	_8 8 8		-
S DOMONTO WEN	1,143.29'	22.5' bgs		USCS Silty Sand	7
Bottom of Well	1,140.20	Slot Size		USCS Low Plasticity Sandy Clay	8
		0.02-inch	:		+
GRO		0.02-111011	MPZ-08A 1" PVC Screen 		_ 10
gro	OUNDWATER ELEVAT	IONS (ft)	Sand	Sand with some gravel	
YTY O	OUNDWATER ELEVAT (Measured from the Top of Cas				- 40
	DTW	Date			12
O Elevation				USCS Low Plasticity Silty Clay	t
Elevation	DTW	Date		USCS Silty Sand	14
를 Elevation			Bentonite	,	\dashv
Elevation	DTW	Date	Demonite		- - 16
Elevation S					<u>_</u>
Elevation	DTW	Date			F
Elevation					18
Elevation	DTW	Date			
7256			100 COLOR		20
4 Flouration	DTW	Date	No 2 Filter	Cond with come movel	_
TAU:O			No. 3 Filter Sand	Sand with some gravel	- 22
ö					- 22



Well No. MW45F

Well Permit No. N/A

			VVCII I CITIIL ING. IN/A
Project		Project No.	
	Beazer/INDSPEC Properties		2568412
Location		Elevation And Datum	
	Petrolia, Pennsylvania		1158.36 NAVD 1988
Drilling Agency		Date Started	Date Finished
	Pennsylvania Drilling	7/28/2004	8/13/2004
Drilling Equipment		Driller	
	Acker Hybrid Drill Rig/CMI Air Rotary Rig		Earl Dye
Size And Type of E	Bit	Inspector	
	20" Hollow Stem Auger, 16", 12", 6", & 4" Roller Bit		Dennis Webster

Method of Well Development

占	Acker H	ybrid Drill Rig/CM	I Air Rotary Rig				Ear	l Dye
TE.GD	Size And Type of Bit	ow Stom Augor 1	6", 12", 6", & 4" R	allar	Diŧ	Inspector	Dennis We	hetor
Template TEMPLATE	Method of Installation The borehole was first ad	Ivanced with 20 inch ho	ollow stem augers to to	of we	eather	ed bedrock. A 16 inc	ch steel casing was then installed to bedro	ock. A 16
CONSTRUCTION_SUMMARYTempla	where a 8 inch steel casir	ng was installed. A 6 ir eter open borehole was	nch bit/hammer was the	n used	dowi	n to 143 where a 4 i	nch steel casing was installed. From 143 of the riser. A 8 inch steel cover with locking the riser.	feet to
NSTRU	Method of Well Development Well was developed on 8	/13/04 by surging the v	well with air from drill ric	ı A to	tal of :	300 gallons was pus	shed out of the well over 1 hour.	
ANGAN_WELL_CC		Too to any canguing allow		, , , , , ,		oo gamene nao pad		
- LANGA	Type of Casing Steel	Diameter 16"/	12"/8"/4"	1		ckfill Material nd Cement/Bei	ntonite Slurry	
port: Log	Type of Screen Open Bore Hole	Diameter NA		Туре		al Material	•	
PM Re	Borehole Diameter	20"/	16"/12"/6"/4"	1	of Filt	er Material		
9 3:35:28	Top of Casing	Elevation 1,160.68'	Depth 2.3' ags		T	Well Details	Soil Classification	Depth (ft)
1/2/200	Top of Seal	Elevation	Depth				Topsoil USCS Low Plasticity Silty Clay	
GPJ 1	Top of Filter	Elevation	Depth				USCS Low Plasticity Silty Clay Sand with some silt and gravel	10
G LOGS.	Top of Screen	Elevation 1,014.86'	Depth 143.5' bgs				Sandstone Shale Shale	30
	Bottom of Filter	Elevation	Depth				Coal Shale Shale	40
INDSPE	Bottom of Well	Elevation 982.56'	Depth 173.5' bgs				Sandstone Claystone	60
ŏ	Screen Length		Slot Size NA			=16", 12", 8", 4" Steel Casing	Claystone Claystone Sandstone	70
DATA/GINT	(Me	DWATER ELEVAT easured from the Top of Cas	ing) `´´			Grout	Claystone Shale Limestone	80 - 90
PFFICE [Elevation	DTW	Date				Shale Shale	100
FROM PHILLY\OFFICE	Elevation	DTW	Date				Coal Sandstone	110
	Elevation	DTW	Date					120
01/DATA	Elevation	DTW	Date				Sandstone	140
Q:\DATA4\2568401\DATA	Elevation	DTW	Date			—Open Hole	Sa. Nation 10	150
Q:\DATA	Elevation	DTW	Date					160



Well No. MW61A

Well Permit No. N/A

			VVCII I CIIIILINO. IN/A
Project		Project No.	
	Beazer/INDSPEC Properties		2568412
Location		Elevation And Datum	
	Petrolia, Pennsylvania		1171.43 NAVD 1988
Drilling Agency		Date Started	Date Finished
	Pennsylvania Drilling Company	5/20/2004	5/20/2004
Drilling Equipme	nt	Driller	•
LQ.	Acker Hybrid Drill Rig		Earl Dye
Size And Type o	f Bit	Inspector	
Size And Type o	6" OD Hollow Stem Auger	Denn	is Webster/Jason Hanna

Method of Well Development

0 001	Tollow Stern Augel					Dennis Webster/Jason	паппа
inside the augers and a feet of PVC riser. A filter grade. A locking expand concrete bollard was the Method of Well Development Well was developed on 5	filter pack was then adder pack of No. 3 sand was lable cap, a 4-inch above in installed in front of we	ed as the augers were splaced in the borehold ground steel protectival.	removed to 1 for e casing	d. Thot belg with	e well consisted of ow grade. A bento a locking cap, and	15 feet of 0.020-inch slot PVC well scre inite seal was then placed from 1 to 0 fe a concrete pad was set above the well.	en and 4 et below One
Type of Casing Steel/PVC riser Type of Screen	Diameter 4-in Diameter	ch/2-inch	Туре	ortlaı	nd Cement/Be	ntonite Slurry	
PVC	2-ind	ch	Be	entor	nite		
Borehole Diameter	6"						
Top of Casing	Elevation 1,174.43'	Depth 3' ags		7	Well Details	Soil Classification	Depth (ft)
•	1,171.43'	Depth 0' bgs				Asphalt USCS Low Plasticity Silty Clay	
·	1,170.43'	1' bgs			-2" PVC Riser Pipe		- 1 - - 2
·	1,170.43'	1' bgs				LISCS Cilt	3
Bottom of Filter	Elevation 1,155.43'	16' bgs					4
Bottom of Well	Elevation 1,152.81'	16' bgs				Coal	5
Screen Length	15.0'	Slot Size 0.02-inch				USCS Poorly-graded Gravel	- - 6 - 7
(N	Measured from the Top of Casi	ng) ` ´				USCS Poorly-graded Gravel	
1166.83'	7.6'	5/20/2004			2 1 10 000001	Sandstone	9
1166.33'	8.1'	5/24/2004					— 10 — 11
1166.12'	8.31'	5/27/2004				USCS Poorly-graded Sandy Gravel	12
						Jacob Salay Glader	13
Elevation	DTW	Date					14
Elevation	DTW	Date					15
	Method of Installation The borehole was advar inside the augers and a feet of PVC riser. A filter grade. A locking expand concrete bollard was the state of PVC riser. A filter grade. A locking expand concrete bollard was the state of PVC riser. Method of Well Development Well was developed on swas purged over 45 min. Type of Casing Steel/PVC riser. Type of Screen PVC Borehole Diameter. Top of Casing Top of Filter. Top of Filter. Top of Screen. Bottom of Filter. Bottom of Well. Screen Length. GROUN Elevation 1166.83' Elevation 1166.12' Elevation	Method of Installation The borehole was advanced with 6 inch outside inside the augers and a filter pack was then adde feet of PVC riser. A filter pack of No. 3 sand was grade. A locking expandable cap, a 4-inch above concrete bollard was then installed in front of we was purged over 45 minutes. The top of outter of the vas purged over 45 minutes. The vas purged over 45 minutes. The top of outter of the vas purged over 45 minutes. The top of outter of the vas purged over 45 minutes. The top of outter of the vas purged over 45 minutes. The top of outter of the vas purged over 45 minutes. The top of outter of the vas purged over 45 minutes. The top of outter of the vas purged over 45 minutes. The top of outter of the vas purged over 45 minutes. The top of outter of the vas purged over 45 minutes. The top of outter of	The borehole was advanced with 6 inch outside diameter hollow stem a inside the augers and a filter pack was then added as the augers were i feet of PVC riser. A filter pack of No. 3 sand was placed in the borehole grade. A locking expandable cap, a 4-inch above ground steel protective concrete bollard was then installed in front of well. Method of Well Development Well was developed on 5/24/04 by pumping with a submersible pump a was purged over 45 minutes. The top of outter casing rises 2.62 feet at a submersible pump a was purged over 45 minutes. The top of outter casing rises 2.62 feet at a submersible pump a was purged over 45 minutes. The top of outter casing rises 2.62 feet at a submersible pump a was purged over 45 minutes. The top of outter casing rises 2.62 feet at a submersible pump a was purged over 45 minutes. The top of outter casing rises 2.62 feet at a submersible pump a was purged over 45 minutes. The top of outter casing rises 2.62 feet at a submersible pump a was purged over 45 minutes. The top of outter casing rises 2.62 feet at a submersible pump a submersible pump a was purged over 45 minutes. The top of outter casing rises 2.62 feet at a submersible pump a was purged over 45 minutes. The top of outter a submersible pump a submersible pump a was purged over 45 minutes. The top of outter a submersible pump a submersibl	Method of Installation The borehole was advanced with 6 inch outside diameter hollow stem augers to inside the augers and a filter pack was then added as the augers were removed feet of PVC riser. A filter pack of No. 3 sand was placed in the borehole to 1 fo grade. A locking expandable cap, a 4-inch above ground steel protective casing concrete bollard was then installed in front of well. Method of Well Development Well was developed on 5/24/04 by pumping with a submersible pump at 1.25 g was purged over 45 minutes. The top of outter casing rises 2.62 feet ags. Type of Casing Steel/PVC riser Type of Screen PVC Diameter PVC Diameter PVC Diameter Type of Screen Portonial Elevation 1,174.43' 3' ags Top of Screen Pethole Diameter 6" Top of Screen 1,171.43' 0' bgs Top of Filter Elevation 1,170.43' 1' bgs Top of Screen Elevation 1,170.43' 1' bgs Bottom of Filter Elevation 1,170.43' 1' bgs Bottom of Filter Elevation 1,152.81' 16' bgs Bottom of Well Elevation Depth 1,152.81' 16' bgs Bottom of Well Elevation Depth 1,152.81' 16' bgs Bottom of Well Elevation Dozeinch GROUNDWATER ELEVATIONS (ft) (Measured from the Top of Casing) Elevation DTW Date 1166.33' 7.6' 5/20/2004 Elevation DTW Date 1166.33' 8.1' 5/24/2004 Elevation DTW Date Elevation DTW Date 1166.12' 8.31' 5/27/2004 Elevation DTW Date Elevation DTW Date Elevation DTW Date Elevation DTW Date 1166.12' 8.31' 5/27/2004	Method of Installation The borehole was advanced with 6 inch outside diameter hollow stem augers to top or inside the augers and a filter pack was then added as the augers were removed. The feet of PVC riser. A filter pack of No. 3 sand was placed in the borehole to 1 foot belig grade. A locking expandable cap, a 4-inch above ground steel protective casing with concrete bollard was then installed in front of well. Method of Well Development Well was developed on 5/24/04 by pumping with a submersible pump at 1.25 gallons was purged over 45 minutes. The top of outter casing rises 2.62 feet ags. Type of Casing Steel/PVC riser Type of Screen Diameter Steel/PVC riser Diameter PVC 2-inch Borehole Diameter 6' Top of Casing Elevation 1,174.43' 3' ags Top of Seal Elevation 1,170.43' 1' bgs Top of Filter Elevation 1,170.43' 1' bgs Bottom of Filter Elevation 1,155.43' 16' bgs Bottom of Filter Elevation Depth 1,152.81' 16' bgs Screen Length GROUNDWATER ELEVATIONS (ft) (Measured from the Top of Casing) Elevation DTW Date 1166.83' 7.6' 5/20/2004 Elevation DTW Date 1166.12' 8.31' 5/27/2004 Elevation DTW Date Date	Method of Installation The borehole was advanced with 6 inch outside diameter hollow stem augers to top of weathered bedrinside the augers and a filter pack was then added as the augers were removed. The well consisted of feet of PVC riser. A filter pack of No. 3 sand was placed in the borehole to 1 foot below grade. A bentograde. A locking expandable cap, a 4-inch above ground steel protective casing with a locking cap, and concrete bollard was then installed in front of well. Method of Well Development Well was developed on 5/24/04 by pumping with a submersible pump at 1.25 gallons per minute until pumping was purged over 45 minutes. The top of outter casing rises 2.62 feet ags. Type of Casing Steel/PVC riser Type of Screen PVC 2-inch Borehole Diameter PVC 2-inch Borehole Diameter 6" Top of Screen Borehole Diameter 6" Top of Casing Elevation 1,171.43' 3' ags Top of Seal Elevation 1,171.43' 1' bgs Top of Screen Elevation 1,170.43' 1' bgs Bottom of Filter Elevation 1,170.43' 1' bgs Bottom of Filter Elevation 1,155.43' 16' bgs Bottom of Filter Elevation 1,155.43' 16' bgs Bottom of Filter Elevation Depth 1,152.81' 16' bgs Bottom of Filter Elevation Double 1,155.43' 16' bgs Bottom of Filter Elevation Double 1,150.281' 16' bgs Bottom of Filter Elevation Double Elevation DTW Date Elevation DTW Date	Method of Meti Development Well vas developed on 572404 by pumping with a submersible pump at 1.25 gallons per minute until purged water became clear. A total of 50 grade. A locking expandable cap, a 4-inch above ground steel protective casing with a locking cap, and a concrete pad was set above the well. Method of Well Development Well vas developed on 572404 by pumping with a submersible pump at 1.25 gallons per minute until purged water became clear. A total of 50 was purged over 45 minutes. The top of outter casing rises 2.62 feet ags. Method of Well Development Well vas developed on 572404 by pumping with a submersible pump at 1.25 gallons per minute until purged water became clear. A total of 50 was purged over 45 minutes. The top of outter casing rises 2.62 feet ags. Type of Casing Steel/PVC riser 4-inch/2-inch Type of Seareen Steel/PVC riser 4-inch/2-inch Portland Cement/Bentonite Sturry Type of Seareen Steel/PVC a 2-inch Borehole Diameter 6" Type of Seareen Figure of Filter Material No. 3 Filtpro Sand Well Details Soil Classification Asphalt USCS Low Plasticity Silty Clay Pipe USCS Sit USCS Sit USCS Sit USCS Poorly-graded Gravel Info.2 8.31' 15/24/2004 Elevation DTW Date 1166.12' 8.31' 5/24/2004 Elevation DTW Date Elevation DTW Date 1166.12' 8.31' 5/24/2004 Elevation DTW Date Elevation DTW



Well No. MW62A

Well Permit No. N/A

			VVCII I CITIIL INO. IN/F
Project		Project No.	
	Beazer/INDSPEC Properties		2568412
Location		Elevation And Datum	
	Petrolia, Pennsylvania		1177.28 NAVD 1988
Drilling Agency		Date Started	Date Finished
	Pennsylvania Drilling Company	5/18/2004	5/18/2004
Drilling Equipmer	nt	Driller	<u> </u>
5	Acker Hybrid Drill Rig		Earl Dye
Size And Type of	Bit	Inspector	
Size And Type of	6" OD Hollow Stem Auger		Dennis Webster

Method of Installation

Method of Well Development

Ž	0 00 6	iollow Stern Auger				Dennis wer	oster
CONSTRUCTION_SUMMARYTemplate TEMPLA	inside the augers and a fi of PVC riser. A filter pack	Iter pack was then adde of No. 3 sand was place	ed as the augers were ced in the borehole to	removed. The well feet below grade.	consisted of A bentonite	ock. A 2-inch PVC monitoring well was instance. 15 feet of 0.02-inch slot PVC well screen a seal was then placed from 2 to 5 feet belower the well. One concrete bollard was the	and 8 feet w grade.
LANGAN WELL CONSTR	Method of Well Development Well was developed on 5 purged over 45 minutes.			at 2 gallons per min	ute until purg	ged water became clear. A total of 50 gallo	ns was
ANG	Type of Casing	Diameter	-l- /O :l-	Type of Backfill Ma			
1- <u>6</u> 0	Steel/PVC riser		ch/2-inch	1		ntonite Slurry	
eport: Lo	Type of Screen PVC	Diameter 2-inc		Type of Seal Mate Bentonite	rial		
PM R	Borehole Diameter	6"		Type of Filter Mate			
9 3:58:20	Top of Casing	Elevation 1,180.26'	Depth 3' ags	We We	ll Details	Soil Classification	Depth (ft)
11/2/200	Top of Seal	Elevation 1,175.28'	Depth 2' bgs	4" St	eel Casing it	USCS Poorly-graded Gravel	-
GPJ	Top of Filter	Elevation 1,172.28'	Depth 5' bgs			Poorly graded sand Fill	2
ING LOGS	Top of Screen	Elevation 1,172.28'	Depth 5' bgs	≪ -Bent ~ -2" P\	onite /C Riser	Doods model and Fill	4
C BORIN	Bottom of Filter	Elevation 1,157.28'	Depth 20' bgs			Poorly graded sand Fill	-
SVINDSPE	Bottom of Well	Elevation 1,154.30'	Depth 20' bgs			USCS Poorly-graded Gravel with Clay	6
F06	Screen Length	15.0'	Slot Size 0.02-inch			USCS Clayey Sand	8
DATA\GINT	(Me	DWATER ELEVATI easured from the Top of Casi				USCS Low Plasticity Silty Clay	10
Ж	Elevation 1164.02'	DTW 16.24'	Date 5/20/2004				- - 12
HILLYO	Elevation 1165.15'	DTW 15.11'	Date 5/21/2004		/C Screen 3 Sand	USCS Low Plasticity Silty Clay	-
FROM PHILLY/OFFIC	Elevation 1165.34'	DTW 14.92'	Date 5/27/2004				— 14 -
	Elevation	DTW	Date			Sandstone	- - 16
\2568401	Elevation	DTW	Date				- - - 18
Q:\DATA4\2568401\DATA	Elevation	DTW	Date				-



Well No. MW62B

Well Permit No. N/A

		VVCILL CITILLING. IN/A
Project	Project No.	
Beazer/INDSPEC Properties		2568412
Location	Elevation And Datum	
Petrolia, Pennsylvania		1177.18 NAVD 1988
Drilling Agency	Date Started	Date Finished
Pennsylvania Drilling Company	5/20/2004	6/7/2004
Drilling Equipment	Driller	
Acker Hybrid Drill Rig/CMI Air Rotary Rig		Earl Dye
Size And Type of Bit	Inspector	
10" OD Hollow Stem Auger/6" OD Roller Bit		Dennis Webster

Method of Installation

Method of Well Development

Acker	Hybrid Drill Rig/CMI	Air Rotary Rig		Earl Dye		
Size And Type of Bit				Inspector		
[10" O	D Hollow Stem Aug	er/6" OD Roller B	it		Dennis W	ebster
to bedrock. A 6 inch rowell consisted of 15 fee below grade. A bentor	oller bit/air hammer was the et of 0.020-inch slot PVC	en used to advance the well screen and 21 feet from 14.5 to 16 feet be	e borehole that of PVC rise allow grade.	nrough bedrock. A 4 r. A filter pack of No A locking expandable	ted bedrock. A 8 inch steel casing was the tinch PVC monitoring well was then insignated in the borehole to be cap was set ontop of riser. A 8 inch steel well.	talled. The 16 feet
Method of Well Developmen	nt					
NAELL NEW WELL	n 6/9/04 by pumping with minutes. The top of outte		t ags.	, ,	d water became clear. A total of 250 ga	illons was
Type of Casing Steel/PVC riser	Diameter 8-in d	ch/4-inch	1 ''	ckfill Material Ind Cement/Ber	ntonite Slurry	
Type of Screen	Diameter		Type of Se		•	
PVC	4-ind	ch	Bento	nite		
Borehole Diameter	10"/	6"		er Material Filpro Sand		
72.85.55.66	Elevation 1,180.21'	Depth 3' ags		Well Details	Soil Classification	Depth (ft)
Top of Seal	Elevation 1,162.68'	Depth 14.5' bgs			Fill	<u> </u>
Top of Filter	Elevation 1,161.18'	Depth 16' bgs				_ 2 _ _ _ 4
Top of Screen	Elevation 1,159.18'	Depth 18' bgs		8" Steel Casing	USCS Low Plasticity Silty Clay	6
Bottom of Filter	Elevation 1,144.18'	Depth 33' bgs		Grout	USCS Silt USCS Low Plasticity Gravelly Clay	8
Bottom of Well	Elevation 1,141.30'	Depth 33' bgs				<u> </u>
Screen Length	15.0'	Slot Size 0.02-inch			USCS Low Plasticity Silty Clay	12 - - 14
GROL	JNDWATER ELEVAT (Measured from the Top of Casi	IONS (ft)		■Bentonite —4" PVC Riser	Sandstone	16
	DTW -2.5'	Date 6/7/2004				18
Elevation	-2.5 DTW	0///2004 Date				20
1182.71' Elevation 1181.71'	-1.5'	6/8/2004				- - 22
Elevation	DTW	Date				24
	-2.0' DTW	6/9/2004 Date		No. 3 Sand —4" PVC Screen		Ė
Elevation 1182.70'	-2.49'	6/10/2004		. 1 10 0010011		<u> </u>
Elevation Live Elevation Elevation Elevation	DTW	Date				- 28 - 20
Elevation	DTW	Date				- 30 - - - 32
ö[_



Well No. MW63A

Well Permit No. N/A

			VVCII I CITIIL INO. IN//
Project		Project No.	
	Beazer/INDSPEC Properties		2568412
Location		Elevation And Datum	
	Petrolia, Pennsylvania		1178.05 NAVD 1988
Drilling Agency		Date Started	Date Finished
	Pennsylvania Drilling Company	5/17/2004	5/18/2004
Drilling Equipmer	nt .	Driller	
	Acker Hybrid Drill Rig		Earl Dye
Size And Type of	Bit	Inspector	
	6" OD Hollow Stem Auger	Denn	is Webster/Jason Hanna

Method of Well Development

Acker I	Hybrid Drill Rig				Earl	Dye
Size And Type of Bit				Inspector		
[≦] 6" OD	Hollow Stem Auge	ſ			Dennis Webster/Jason Ha	anna
inside the augers and a feet of PVC riser. A filte below grade. A locking	filter pack was then adder or pack of No. 3 sand was	ed as the augers were s placed in the borehol on top of the riser. A 4	removed. The e to 4.5 feet be	well consisted of elow grade. A ben	ock. A 2-inch PVC monitoring well was ins 15 feet of 0.020-inch slot PVC well screen atonite seal was then placed from 2.5 to 4.5 tive casing with locking cap was set above	and 8 5 feet
Method of Well Development	t					
Well was developed on purged over 35 minutes Type of Casing	5/20/04 by pumping with the top of outter casin		at 2 gallons pe	, ,	ged water became clear. A total of 35 gallo	ons was
Steel/PVC riser		ch/2-inch	1 7'	id Cement/Bei	ntonite Slurry	
Type of Screen	Diameter		Type of Sea		,	
PVC	2-ind	ch	Bentor			
Borehole Diameter			Type of Filte	r Material		
₽	6"		No. 3 F	Filpro Sand		
Top of Casing	Elevation 1,180.89'	Depth 2.8' ags		Well Details	Soil Classification	Depth (ft)
Top of Seal	Elevation 1,175.55'	Depth 2.5' bgs		-Grout	Silty sands fill	
Top of Filter	Elevation 1,173.55'	Depth 4.5' bgs		-2" PVC Riser	USCS Sandy Silt	2
Top of Screen	Elevation 1,173.05'	Depth 5' bgs		-Bentonite		- - - 4
등 Bottom of Filter	Elevation 1,158.05'	Depth 20' bgs				<u> </u>
Bottom of Well	Elevation 1,155.21'	Depth 20' bgs			USCS Silt	6
Screen Length	15.0'	Slot Size 0.02-inch				8
(I	NDWATER ELEVAT Measured from the Top of Casi	ng) ` ´			USCS Low Plasticity Sandy Clay	10
1170.69'	DTW 10.2'	Date 5/18/2004		-No. 3 Sand	USCS Poorly-graded Gravelly Sand	12
Elevation 1169.79'	DTW 11.1'	Date 5/19/2004		2" PVC Screen	0303 Footiy-graded Gravelly Sand	-
Elevation	DTW	Date			USCS Low Plasticity Silty Clay	14
	DTW	Date				- - - 16
Elevation Elevation	DTW	Date				- - - 18
Elevation	DTW	Date				



Well No. MW63B

Well Permit No. N/A

			VVCII I CITIIL ING. IN//
Project		Project No.	
	Beazer/INDSPEC Properties		2568412
Location		Elevation And Datum	
	Petrolia, Pennsylvania		1177.18 NAVD 1988
Drilling Agency		Date Started	Date Finished
	Pennsylvania Drilling Company	5/18/2004	5/19/2004
Drilling Equipme	nt	Driller	•
_	Acker Hybrid Drill Rig/CMI Air Rotary Rig		Earl Dye
Size And Type of	f Bit	Inspector	
Size And Type of	10" OD Hollow Stem Auger/6" OD Roller Bit		Dennis Webster

Method of Installation

Method of Well Development

	JD Hollow Stern Aug	ei/o OD Rollei B			Dennis W	ebster
bedrock. A 6 inch rol consisted of 15 feet of grade. A bentonite so	ller bit/air hammer was then of 0.020-inch slot PVC well:	used advancing the b screen and 33 feet of F 5 to 27 feet below grad	orehole through bedro PVC riser. A filter pack e. A locking expandal	ock. A 4-ind k of No. 3 s ble cap was	rock. A 8 inch steel casing was then instach PVC monitoring well was then installes and was placed in the borehole to 27 fess set ontop of the riser. A 8 inch steel co	d. The well et below
Method of Well Developm Well was developed opurged over 1 hour 1				e until purg	ed water became clear. A total of 350 g	allons was
Type of Casing	Diameter		Type of Backfill Mate	rial		
Steel/PVC riser		ch/4-inch	1 **		ntonite Slurry	
Type of Screen	Diameter		Type of Seal Materia		-	
PVC	4-ind	ch	Bentonite			
Borehole Diameter			Type of Filter Materia			
	10"/	6"	No. 3 Filpro	Sand		
Top of Casing	Elevation 1,179.31'	Depth 2.1' ags	Well [Details	Soil Classification	Depth (ft)
Top of Seal	Elevation 1,152.18'	Depth 25' bgs			Silty sands fill	-
Top of Filter	Elevation 1,150.18'	Depth 27' bgs			USCS Low Plasticity Silty Clay	- - - - 5
Top of Screen	Elevation 1,146.18'	Depth 31' bgs				- - - 10
Bottom of Filter	Elevation 1,131.18'	Depth 46' bgs	Grout		Sandy and gravelly CLAY	10
Bottom of Well	Elevation 1,129.05'	Depth 46' bgs Slot Size	8" Stee	I Casing	USCS Low Plasticity Silty Clay	— 15 —
Screen Length	15.0'	0.02-inch				20
GRC	OUNDWATER ELEVAT (Measured from the Top of Casi DTW	IONS (ft)			USCS Well-graded Sand with Clay	
	11.2'	5/19/2004 Date	- Bentoni	ite	USCS Low Plasticity Silty Clay USCS Low Plasticity Gravelly Clay	- 25
1167.76'	11.55'	5/20/2004 Date	4" PVC	Riser	Sandstone	30
	DTW	Date				- - - 35
Lievation		Date	-No. 3 S			-
Elevation	DTW	Date		2010011		- 40
Elevation	DTW	Date				- - - 45



Well No. MW64A

Well Permit No. N/A

			VVCII I CITIIL INO. IN/
Project		Project No.	
	Beazer/INDSPEC Properties		2568412
Location		Elevation And Datum	
	Petrolia, Pennsylvania		1164.6 NAVD 1988
Drilling Agency		Date Started	Date Finished
	Pennsylvania Drilling Company	7/12/2004	7/13/2004
Drilling Equipme	ent	Driller	· '
	Acker Hybrid Drill Rig		Earl Dye/Jim Lang
Size And Type of	of Bit	Inspector	
i	6" OD Hollow Stem Auger		Dennis Webster

Method of Installation

Method of Well Development

0 OD	Hollow Stern Auge	ſ		Dennis wei	ostei
inside the augers and a feet of PVC riser. A filte	filter pack was then adder pack of No. 3 sand wa	ed as the augers were s placed in the boreho	removed. The well consisted of e to 5.55 feet below grade. A be	ock. A 2-inch PVC monitoring well was ins f 15 feet of 0.020-inch slot PVC well screen entonite seal was then placed from 3.5 to 5 otective casing with locking cap was set on	and 11.8 5.55 feet
Mathadas (Mall Danalana					
Method of Well Developmen Well was developed on purged over 30 minutes Type of Casing			at 3 gallons per minute until purç	ged water became clear. A total of 50 gallo	ons was
Type of Casing	Diameter	•	Type of Backfill Material		
Steel/PVC riser		ch/2-inch	Portland Cement/Be	entonite Slurry	
Type of Screen	Diameter		Type of Seal Material		
PVC	2-in	ch	Bentonite		
Borehole Diameter	6"		Type of Filter Material		
Ton of Cooling	Elevation	Donth	No. 3 Filpro Sand		1
Top of Casing	1,166.71'	Depth 2.1' ags	Well Details	Soil Classification	Dept (ft)
Top of Seal	Elevation 1,161.10'	Depth 3.5' bgs		Topsoil	-
Top of Filter	Elevation	Depth	Grout	USCS Low Plasticity Silty Clay	+ .
Top of times	1,159.05'	5.6' bgs			_ 2
Top of Screen	Elevation 1,154.80'	Depth 9.8' bgs	—₩/// ■ Bentonite		- 4
Bottom of Filter	Elevation 1,139.80'	Depth 24.8' bgs		USCS Poorly-graded Gravel with Clay	<u> </u>
Bottom of Well	Elevation 1,137.36'	Depth 24.8' bgs	2" PVC Riser	USCS Low Plasticity Silty Clay	- - 8
Screen Length	15.0'	Slot Size 0.02-inch		USCS Well-graded Sand with Clay	10
GROU	NDWATER ELEVAT	IONS (ft)			_ 12
GROU (Measured from the Top of Cas DTW	ing) ´´ Date		Sand with some silt and gravel	Ŧ
1157.54'	9.17'	7/13/2004			- 14
1157.54' Elevation 1157.79' Elevation 1157.76'	DTW	Date	No. 3 Sand	USCS Low Plasticity Silty Clay	+
1157.79'	8.92'	7/14/2004			— 16 _
Elevation	DTW	Date	2" PVC Screen		_ 18
1157.76'	8.95'	7/19/2004			ļ
Elevation Elevation	DTW	Date			_ 20
Elevation	DTW	Date	- × = ×		E
				USCS Silt	22
Elevation	DTW	Date		Sandstone	ļ.
					_ 24



Well No. MW64B

Well Permit No. N/A

			Well I cittill No. 14/
Project		Project No.	
	Beazer/INDSPEC Properties		2568412
Location		Elevation And Datum	
	Petrolia, Pennsylvania		1164.60 NAVD 1988
Drilling Agency		Date Started	Date Finished
	Pennsylvania Drilling Company	7/16/2004	7/28/2004
Drilling Equipme	ent	Driller	•
	Acker Hybrid Drill Rig/CMI Air Rotary Rig		Earl Dye
Size And Type of	of Bit	Inspector	
	6" OD Hollow Stem Auger/3 1/4" NX Core	Denni	s Webster/Cris Schwarz

Method of Installation

Method of Well Development

ڳ	6" OD F	Hollow Stem Auge	Dennis Webster/Cris Schwarz				
CONSTRUCTION_SUMMARYTemplate TEMPLA	bedrock. A 3 1/4" inch N consisted of 10 feet of 0. grade. A bentonite seal locking cap was then place. Method of Well Development	X Core was then used of 020-inch slot PVC well was then placed from 200 ced ontop of the well.	advancing the borehole screen and 32 feet of I 2 to 25 feet below grad	through bedrock. VC riser. A filter per A locking expan	A 2-inch PV0 pack of No. 3 s idable cap wa	rock. A 8 inch steel casing was then ins C monitoring well was then installed. Th sand was placed in the borehole to 25 t is set ontop of the riser. A 8 inch steel control of the riser.	e well feet below over with
ANGAN WELL CON	purged over 20 minutes. Type of Casing		g rises 2.38 feet ags.	Type of Backfill N		ged water became clear. A total of 30 g	alions was
Ą	Steel/PVC riser		ch/2-inch	1 "		ntonite Slurry	
Log	Type of Screen	Diameter		Type of Seal Mat		,	
port:	PVC	2-in	ch	Bentonite			
 %	Borehole Diameter			Type of Filter Ma			
PM			3 1/4"	No. 3 Filp	o Sand		
9 3:58:37	Top of Casing	Elevation 1,166.98'	Depth 2.4' ags	We	ell Details	Soil Classification	Depth (ft)
11/2/200	Top of Seal	Elevation 1,142.60'	Depth 22' bgs			Topsoil USCS Low Plasticity Silty Clay	
GPJ	Top of Filter	Elevation 1,139.60'	Depth 25' bgs				<u>-</u> - - 5
G LOGS.	Top of Screen	Elevation 1,134.60'	Depth 30' bgs			USCS Low Plasticity Silty Clay	-
C BORIN	Bottom of Filter	Elevation 1,124.60'	Depth 40' bgs	⊈ -Gro		Sand with some silt and gravel	- - 10
S\INDSPE	Bottom of Well	Elevation 1,122.22'	Depth 40' bgs	8" \$	Steel Casing	USCS Clayey Sand	-
F06	Screen Length	10.0'	Slot Size 0.02-inch				— 15 - -
DATA/GINT	(M	IDWATER ELEVAT leasured from the Top of Cas	ing)				- - 20
Щ	Elevation 1160.69'	DTW 6.29'	Date 7/28/2004				-
NP.	Elevation	DTW	Date	Ber	tonite	Claystone	——————————————————————————————————————
싉	1159.55'	7.43'	7/29/2004				_ 25
FROM PHILLY\OFFIC	Elevation	DTW	Date	2" F	PVC Riser	Sandstone	
	Elevation	DTW	Date	- No.	3 Sand	Siltstone	
Q:\DATA4\2568401\DATA	Elevation	DTW	Date	2" F	VC Screen	Shale	35
DATA4	Elevation	DTW	Date			Sandstone	



Well No. MW65A

Well Permit No. N/A

Destant		ID-2(N)	vveii i eiiiiit ivo. iv
Project	Beazer/INDSPEC Properties	Project No.	2568412
Location		Elevation And Datum	
	Petrolia, Pennsylvania		1165.17 NAVD 1988
Drilling Agency		Date Started	Date Finished
	Pennsylvania Drilling Company	7/13/2004	7/13/2004
Drilling Equipme	ent	Driller	· · · · · · · · · · · · · · · · · · ·
	Acker Hybrid Drill Rig		Jim Lang
Size And Type of	of Bit	Inspector	
	6" OD Hollow Stem Auger		Dennis Webster

Method of Installation

Method of Well Development

5 OL	Hollow Stem Auge				Dennis we	bstei
inside the augers and feet of PVC riser. A fi	a filter pack was then adde tter pack of No. 3 sand was	ed as the augers were s placed in the borehole	removed. The well c e to 5.5 feet below gr	onsisted of ade. A ben	ick. A 2-inch PVC monitoring well was ins 10 feet of 0.020-inch slot PVC well screer itonite seal was then placed from 3.5 to 5. ective casing with locking cap was set abo	n and 8 5 feet
Method of Well Developme	ent					
Well was developed of purged over 20 minuted by Type of Casing	n 7/30/04 by pumping with es. The top of outter casin		at 3 gallons per minu	te until purg	ed water became clear. A total of 30 gallo	ons was
Type of Casing	Diameter		Type of Backfill Mate	erial		
Steel/PVC riser	4-ind	ch/2-inch	Portland Ce	ment/Ber	ntonite Slurry	
Type of Screen	Diameter		Type of Seal Materia	al		
PVC	2-ind	ch	Bentonite			
Borehole Diameter			Type of Filter Materi			
<u> </u>	6"		No. 3 Filpro	Sand		
Top of Casing	Elevation 1,167.72'	Depth 2.6' ags	1 1 1 1 1 1	Details	Soil Classification	Depth (ft)
Top of Seal	Elevation 1,162.17'	Depth 3' bgs	4" Stee	el Casing	Topsoil	
Top of Server	Elevation 1,159.67'	Depth 5.5' bgs	Grout		USCS Low Plasticity Silty Clay	1 2
or op or screen	Elevation 1,158.87'	Depth 6.3' bgs				3
	Elevation 1,148.87'	Depth 16.3' bgs	≪ -Bentor	nite	USCS Poorly-graded Gravel with Clay	4
Bottom of Well	Elevation 1,146.32'	Depth 16.3' bgs	2" PVC	Riser		5 - - 6
Screen Length	10.0'	Slot Size 0.02-inch			USCS Poorly-graded Sand	7
GRO Elevation	UNDWATER ELEVAT (Measured from the Top of Casi DTW	IONS (ft)				8
	6.8'	7/13/2004			Wood	E
Elevation 1159.90' Elevation	DTW 7.82'	Date 7/14/2004		Sand	USCS Low Plasticity Silty Clay	10
Elevation	DTW	Date		Screen		12
Elevation Elevation	DTW	Date				13
Elevation	DTW	Date			Sandstone	14
Elevation	DTW	Date				16



Well No. MW65B

Well Permit No. N/A

			Well Fellill No. N/A			
Project		Project No.				
	Beazer/INDSPEC Properties		2568412			
Location		Elevation And Datum				
	Petrolia, Pennsylvania		1164.75 NAVD 1988			
Drilling Agency		Date Started	Date Finished			
	Pennsylvania Drilling Company	7/16/2004	7/27/2004			
Drilling Equipmer	nt	Driller	•			
	Acker Hybrid Drill Rig/CMI Air Rotary Rig		Earl Dye			
Size And Type of	Bit	Inspector				
	6" OD Hollow Stem Auger/3 1/4" NX Core	Denni	Dennis Webster/Cris Schwarz			

Method of Installation

Method of Well Development

Acker Hybrid Drill Rig/CMI Air Rotary Rig					Earl Dye		
Size And Type of Bit				Inspector	Inspector Dennis Webster/Cris Schwarz		
6" OL	Hollow Stem Auge	r/3 1/4" NX Core			Dennis Webster/Cris Scr	iwarz	
bedrock. A 3 1/4" inch	n NX Core was then used a 0.020-inch slot PVC well al was then placed from 19	advancing the borehole screen and 19.5 feet o	e through bedroo f PVC riser. A fil	ck. A 2-inch PVC Iter pack of No. 3	rock. A 8 inch steel casing was then install C monitoring well was then installed. The vB sand was placed in the borehole to 17 fb set ontop of riser. A 8 inch steel cover wi	well eet below	
Method of Well Developme	nt						
Well was developed o purged over 25 minute Type of Casing	n 7/30/04 by pumping with es. The top of outter casin Diameter	g rises 2.32 feet ags.	at 3 gallons per		ed water became clear. A total of 40 gall	ons was	
Steel/PVC riser		ch/2-inch	1 **		ntonite Slurry		
Type of Screen	Diameter		Type of Seal M		,		
PVC	2-in	ch	Bentonit	e			
Borehole Diameter	10"/	3 1/4"	Type of Filter No. 3 Fil	Material Ipro Sand			
Top of Casing	Elevation 1,167.07'	Depth 2.3' ags	I V	Well Details	Soil Classification	Depth (ft)	
Top of Seal	Elevation 1,149.75'	Depth 15' bgs			Topsoil	-	
Top of Filter	Elevation	Depth			USCS Low Plasticity Silty Clay		
20 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	1,147.75'	17' bgs				F _	
Top of Screen	Elevation 1,147.75'	Depth 17' bgs				- 4	
Bottom of Filter	Elevation	Depth	- 1			6	
A BOUGHT OF THE	1,136.75'	28' bgs		" Steel Casing Frout		8	
Bottom of Well	Elevation 1,134.43'	Depth 28' bgs			USCS Poorly-graded Sand	Ė	
Screen Length	.,	Slot Size			Sand with some silt and gravel	10	
	11.0'	0.02-inch				12	
GROI Flevation	JNDWATER ELEVAT (Measured from the Top of Cas		2	" PVC Riser	USCS Poorly-graded Sand with Clay	_ - - 14	
Elevation	DTW	Date) and an ita Chama	Sandstone	+ 40	
1159.37'	7.70'	7/27/2004	- III III III III III III III III III I	Bentonite Slurry	Canastone	— 16 - -	
1159.37' Elevation 1159.08'	DTW 7 .99'	Date 7/28/2004				18	
Elevation	DTW	Date				20	
	DTW	Date		lo. 3 Sand	Coal		
Elevation Elevation Elevation	DTW	Date		" PVC Screen		- - 24 -	
Elevation	DTW	Date			Claystone		



Well No. MW66A

Well Permit No. N/A

				VVCII I CITIIL ING. IN/
Project		Project N	lo.	
	Beazer/INDSPEC Properties			2568412
Location		Elevation	And Datum	
	Petrolia, Pennsylvania			1164.74 NAVD 1988
Drilling Agency		Date Star	rted	Date Finished
	Pennsylvania Drilling Company		7/14/2004	7/15/2004
Drilling Equipme	ent	Driller		
_	Acker Hybrid Drill Rig			Jim Lang
Size And Type o	f Bit	Inspector	•	
Size And Type o	6" OD Hollow Stem Auger			Dennis Webster

Method of Installation

Method of Well Development

Ž	S OD Hollow Stern Auger Dennis Webster						
_CONSTRUCTION_SUMMARYTemplate TEMPLA	Method of Installation The borehole was advance inside the augers and a fifeet of PVC riser. A filter below grade. A locking e well.	ilter pack was then adde pack of No. 3 sand was	ed as the augers were s placed in the borehol	removed. e to 5.89 t	The well consisted of feet below grade. A be	ck. A 2-inch PVC monitoring well was ins 10 feet of 0.020-inch slot PVC well screen entonite seal was then placed from 3.89 to ective casing with cap and lock was set a	n and 10 5.89 feet
LANGAN_WELL_CONSTRU	Method of Well Development Well was developed on 7 purged over 22 minutes.	7/30/04 by pumping witl The top of outter casin	n a submersible pump g rises 2.55 feet ags.	at 2.5 gall	ons per minute until pu	rged water became clear. A total of 55 ga	allons was
ANG	Type of Casing	Diameter		1	Backfill Material	atawaita Olympa	
- go	Steel/PVC riser Type of Screen	4-Ind	ch/2-inch	1	tland Cement/Ber	illorine Siurry	
oort: L	PVC	2-in		1	ntonite		
. Reg	Borehole Diameter			1	Filter Material		
PM E		6"			3 Filpro Sand		
9 3:58:48	Top of Casing	Elevation 1,167.29'	Depth 2.6' ags		Well Details	Soil Classification	Depth (ft)
11/2/200	Top of Seal	Elevation 1,160.85'	Depth 3.9' bgs			Topsoil	1
3.GPJ	Top of Filter	Elevation 1,158.85'	Depth 5.9' bgs		-Grout	Sand with some gravel	2
ING LOGS	Top of Screen	Elevation 1,156.74'	Depth 8' bgs		4" Steel Casing	USCS Low Plasticity Silty Clay	3
C BORII	Bottom of Filter	Elevation 1,146.74'	Depth 18' bgs		<-Bentonite Seal		5
SVINDSPE	Bottom of Well	Elevation 1,144.19'	Depth 18' bgs		2" PVC Riser		6
FOG	Screen Length	10.0'	Slot Size 0.02-inch		2 T VOTRISEI	USCS Low to High Plasticity Clay	- 7 - 8
DATA\GINT		IDWATER ELEVAT leasured from the Top of Casi				USCS Poorly-graded Sand with Clay	9
Ж	Elevation 1161.48'	DTW 5.81'	Date 7/15/2004				10
#LLY\0	Elevation 1161.02'	DTW 6.27'	Date 7/16/2004				11
FROM PHILLY/OFFIC	Elevation	DTW	Date		2" PVC Screen	Sandstone	13
	Elevation	DTW	Date			Sand with some silt and gravel	14
4\256840	Elevation	DTW	Date				16
Q:\DATA4\2568401\DATA	Elevation	DTW	Date		為 第 <u></u>	Sandstone	17



Well No. MW66B

Well Permit No. N/A

			Well Fellill No. N/A
Project	Proje	ject No.	
Beazer/INDSPEC Properties			2568412
Location	Elev	vation And Datum	
Petrolia, Pennsylvania			1164.77 NAVD 1988
Drilling Agency	Date	e Started	Date Finished
Pennsylvania Drilling Company		7/16/2004	7/19/2004
Drilling Equipment	Drille	ler	
Acker Hybrid Drill Rig/CMI Air R	otary Rig		Earl Dye
Size And Type of Bit	Insp	pector	
Acker Hybrid Drill Rig/CMI Air Rigical Size And Type of Bit 10" OD Hollow Stem Auger/6" C	D Roller Bit		Dennis Webster

Method of Installation

Method of Well Development

10" OD Hollow Stem Auger/6" OD Roller Bit					Dennis webster			
bedrock. A 6 in consisted of 15 below grade. A	as advanced with 10 inch outside ch roller bit/air hammer was then feet of 0.020-inch slot PVC well s bentonite seal was then placed frng cap was then placed ontop of the control of the	used advancing the b creen and 21.75 feet om 16.5 to 18.5 feet b	orehole through bedro of PVC riser. A filter	ock. A 4-inc pack of No.	ock. A 8 inch steel casing was then ins th PVC monitoring well was then instal 3 sand was placed in the borehole to le cap was set ontop of the riser. A 8 in	led. The well 18.5 feet		
Well was developurged over 35 Type of Casing			at 2.5 gallons per min	ute until pur	ged water became clear. A total of 70	gallons was		
Type of Casing	Diameter		Type of Backfill Mate					
Steel/PVC ri		h/4-inch	Portland Cei		tonite Slurry			
Type of Screen PVC	Diameter 4 inc	h	Type of Seal Materia	ıl				
Borehole Diameter	4-inc	11	Bentonite Type of Filter Materia	al				
Egorenole Diameter	10"/6	,"	No. 3 Filpro					
Top of Casing	Elevation 1,166.90'	Depth 2.1' ags	 	Details	Soil Classification	Depth		
S Top of Seal	Elevation	Depth	-[(ft)		
	1,148.27'	16.5' bgs			Topsoil			
: Top of Filter	Elevation	Depth			USCS Low Plasticity Silty Clay	_ 2		
.GPJ	1,146.27'	18.5' bgs				- 4		
Top of Screen	Elevation 1,144.77'	Depth 20' bgs		I Canica	Sand with some silt and gravel	- 6		
Bottom of Filter	Elevation 1,129.77'	Depth 35' bgs	Grout	el Casing		- 8 - - 10		
Bottom of Well	Elevation 1,127.68'	Depth 35' bgs			Sand with some silt and gravel	10		
Screen Length Screen Length	15.0'	Slot Size 0.02-inch	4" PVC	Riser		_ 14 		
A/GIN	GROUNDWATER ELEVATION	ONS (ft)			Sandstone	16		
Lloyation	(Measured from the Top of Casin	g) ` ´	■ Benton	ite Seal		18		
H Lievation	DTW 5.75'	Date 7/19/2004						
Elevation	DTW	Date			Claystone	22		
⊒ 1160.89'	6.01'	7/20/2004			Sandstone			
Elevation Elevation	DTW	Date			53.100010	24 _ _ 26		
	DTW	Date	4" PVC	Sand Screen		28		
Elevation Elevation	DTW	Date				30		
Elevation	DTW	Date				32		



Well No. MW67B

Well Permit No. N/A

			Well I citill INO. IN/A
Project		Project No.	
	Beazer/INDSPEC Properties		2568412
Location		Elevation And Datum	
	Petrolia, Pennsylvania		1278.45 NAVD 1988
Drilling Agency		Date Started	Date Finished
	Pennsylvania Drilling Company	7/20/2004	7/23/2004
Drilling Equipmen	nt .	Driller	•
	Acker Hybrid Drill Rig/CMI Air Rotary Rig		Earl Dye
Size And Type of	Bit	Inspector	
	10" OD Hollow Stem Auger/6" OD Roller Bit	Dennis \	Nebster/Cris Schwarz

Method of Installation

Method of Well Development

Acker Hybrid Drill Rig/CMI Air Rotary Rig				Earl Dye		
Size And Type of Bit	O Hallaw Ctam Ava	or/6" OD Dollor D	:4	Inspector	Dannia Wahataw/Cria Ca	
10" OI	D Hollow Stem Aug	er/6" OD Roller B	<u>ιτ</u>		Dennis Webster/Cris Sc	nwarz
bedrock. A 6 inch rolle consisted of 15 feet of	r bit/air hammer was ther 0.020-inch slot PVC well en placed from 23 to 27.	used advancing the b screen and 36.85 feet	orehole through be of PVC riser. A filt	edrock. A 4-inder pack of No.	rock. A 8 inch steel casing was then inst ch PVC monitoring well was then installe . 3 sand was placed in the borehole to 2 the riser. A 8 inch steel cover with lockin	ed. The well 7.5 feet bas.
Method of Well Developmer	nt					
Type of Casing	7/29/04 by pumping wit s. The top of outter casin Diameter	g rises 2.32 feet ags.	at 3 gallons per mi		ed water became clear. A total of 45 ga	illons was
Steel/PVC riser	8-in	ch/4-inch	Portland C	Cement/Ber	ntonite Slurry	
Type of Screen PVC	Diameter 4-in		Type of Seal Mat Bentonite	erial		
Borehole Diameter	10"/	6"	Type of Filter Ma No. 3 Filpr			
Top of Casing	Elevation 1,280.77'	Depth 2.3' ags	We	ell Details	Soil Classification	Depth (ft)
Top of Seal	Elevation 1,255.45'	Depth 23' bgs			Topsoil USCS Clayey Sand	
Top of Filter	Elevation 1,250.95'	Depth 27.5' bgs			USCS Poorly-graded Sand USCS Low Plasticity Silty Clay	5
Top of Screen	Elevation 1,243.35'	Depth 35.1' bgs			USCS Poorly-graded Sand Sandstone	
Bottom of Filter	Elevation 1,228.35'	Depth 50.1' bgs	G ro			-
Bottom of Well	Elevation 1,226.03'	Depth 50.2' bgs	4" F	VC Riser		— 15 - -
Screen Length	15.0'	Slot Size 0.02-inch				20
	NDWATER ELEVAT (Measured from the Top of Cas		- Sen	tonite Seal	Sandstone	- - - 25
Elevation 1247.47' Elevation 1245.35'	DTW 33.3'	Date 7/22/2004				- - - - 30
Elevation	DTW	Date			Shala	
1245.35'	35.42'	7/23/2004			Shale Sandstone	- ‡ =
Elevation	DTW	Date			Saliustolie	— 35 - - -
	DTW	Date		3 Sand		40
Elevation Elevation	DTW	Date	4" F	VC Screen	Sandstone	_ _ _ 45
Elevation	DTW	Date				E



Well No. MW68D

Well Permit No. N/A

			Well I chill No. N/A
Project		Project No.	
	Beazer/INDSPEC Properties		2568412
Location		Elevation And Datum	
	Petrolia, Pennsylvania		1301.20 NAVD 1988
Drilling Agency		Date Started	Date Finished
	Pennsylvania Drilling Company	7/2/2004	7/13/2004
Drilling Equipmen	nt .	Driller	•
	Acker Hybrid Drill Rig/CMI Air Rotary Rig		Earl Dye
Size And Type of	Bit	Inspector	
i	10" OD Hollow Stem Auger/6" OD Roller Bit	Dennis V	Vebster/Cris Schwarz

Method of Installation

Method of Well Development

Acker	Acker Hybrid Drill Rig/CMI Air Rotary Rig				Earl Dye		
Size And Type of Bit	Inspector						
[10" C	er/6" OD Roller B	it Dennis Webster/Cris Schwarz					
bedrock. A 6 inch rolle installed. The well con borehole to 194 feet b	er bit/air hammer was then nsisted of 15 feet of 0.020-i	used advancing the b nch slot PVC well scre hen placed from 190 to	orehole then and 2	hrough bed 201 feet of	drock to 214 f PVC riser. A	rock. A 8 inch steel casing was then inst feet bgs. A 4-inch PVC monitoring well A filter pack of No. 3 sand was placed in ession cap was set ontop of the riser. A	was then the
Method of Well Developme	ent						
MELL SAN WELL	ur and 15 minutes. The to	p of outter casing rises	2.51 fee	t ags.	·	rged water became clear. A total of 300) gallons
Steel/PVC		ch/4-inch	Po	f Backfill Ma rtland			
Type of Screen PVC	Diameter 4-in 0	ch	Ве	f Seal Mate ntonite			
Borehole Diameter	10"/0	6"		f Filter Mate . 3 Filpro			
Top of Casing	Elevation 1,303.20'	Depth 2' ags		Wel	ll Details	Soil Classification	Depth (ft)
Top of Seal	Elevation 1,111.20'	Depth				Topsoil	
Top of Filter	I, I I I.ZU Elevation	190' bgs Depth	_88	\bowtie		USCS Low Plasticity Silty Clay USCS Silty Sand	
G Lob of Little	1,107.20'	194' bgs				Sandstone	_ - 25
Top of Screen	Elevation 1,104.20'	Depth 197' bgs					- 25
Bottom of Filter	Elevation 1,087.20'	Depth 214' bgs		4" P\	/C Riser	Sandstone	50
Bottom of Well	Elevation 1,087.20'	Depth 214' bgs				Coal Sandstone	- - - 75
Screen Length	17.0'	Slot Size 0.02-inch					-
GRO!	UNDWATER ELEVAT (Measured from the Top of Casi	IONS (ft)		- Grou	t	Siltstone	100
Elevation 1258.14'	DTW 45.06'	Date 7/10/2004				Sandstone	 - 125
1258.14' Elevation 1255.40'	DTW 47.8'	Date 7/12/2004				Claystone	
Elevation 1247.30'	DTW 55.9'	Date 7/13/2004				,	<u> </u>
	DTW	Date				Coal Claystone	175
Elevation Elevation	DTW	Date		Port	onite Seal	Shale	
Elevation	DTW	Date				Limestone	- 200 -



Well No. MW68E

Well Permit No. N/A

Project		Project No.	
	Beazer/INDSPEC Properties		2568412
Location		Elevation And Datum	
	Petrolia, Pennsylvania		1301.62 NAVD 1988
Drilling Agency		Date Started	Date Finished
	Pennsylvania Drilling Company	6/30/2004	7/2/2004
Drilling Equipmen	nt	Driller	
_	Acker Hybrid Drill Rig/CMI Air Rotary Rig		Earl Dye
Size And Type of	Bit	Inspector	
Size And Type of	10" OD Hollow Stem Auger/2" OD NX Core/6" OD Roller	₿it	Dennis Webster

Method of Installation

Method of Well Development

10 0	D Hollow Stem Aug	enz od na core	6/6 OD Roller Bit	Dennis v	vebsier
bedrock. A 2" inch NX PVC monitoring well w A filter pack of No. 3 so	Core was advanced deternance the control of the con	ermining lithology and the lithology and lithology	nen a 6 inch roller bit/air hamme f 0.020-inch slot PVC well scree	Irock. A 8 inch steel casing was then ins r was advanced down to 275 feet bgs. en set at 260.15 feet bgs and 248 feet o ed from 237.5 to 240 feet bgs. A locking p of the well.	A 4-inch of PVC riser.
was purged over 2 hou		h a submersible pump ng rises 1.97 feet ags.	at 2.0 gallons per minute until p	urged water became clear. A total of 38	0 gallons
Type of Casing	Diameter		Type of Backfill Material		
Steel/PVC riser		ch/4-inch	Portland		
Type of Screen PVC	Diameter 4-in		Type of Seal Material Bentonite		
Borehole Diameter	10"/	6"	Type of Filter Material No. 3 Filpro Sand		
Top of Casing	Elevation 1,304.12'	Depth 2.5' ags	Well Details	Soil Classification	Depti (ft)
Top of Seal	Elevation 1,064.12'	Depth 237.5' bgs		Topsoil USCS Low Plasticity Silty Clay	-
Top of Filter	Elevation 1,061.62'	Depth 240' bgs		USCS Silty Sand Sandstone	- - 25
Top of Screen	Elevation 1,056.47'	Depth 245.2' bgs			- - 50
Bottom of Filter	Elevation 1,041.47'	Depth 260.2' bgs		Coal Sandstone	75
Bottom of Well	Elevation 1,041.47'	Depth 260.2' bgs		Claystone Sandstone	- 73
Screen Length	15.0'	Slot Size 0.02-inch		Siltstone	— 100 —
GROL	JNDWATER ELEVAT (Measured from the Top of Cas	IONS (ft)	Grout 4" PVC Riser	Sandstone	125
Elevation 1248.92'	DTW 55.2'	Date 7/1/2004		Claystone	150
Elevation 1235.22'	DTW 68.9'	Date 7/2/2004		Coal Claystone	175
Elevation	DTW	Date		Shale Limestone	
Elevation	DTW	Date			200
Elevation	DTW	Date		Claystone	_ — 225
Elevation	DTW	Date	Bentonite Seal	Sandstone	



Well No. MW69D

Well Permit No. N/A

			VVCII I CITIILIVO. IV/
Project		Project No.	
	Beazer/INDSPEC Properties		2568412
Location		Elevation And Datum	
	Petrolia, Pennsylvania		1423.12 NAVD 1988
Drilling Agency		Date Started	Date Finished
	Pennsylvania Drilling Company	6/10/2004	6/16/2004
Drilling Equipmen	nt	Driller	•
	Acker Hybrid Drill Rig/CMI Air Rotary Rig		Earl Dye
Size And Type of	Bit	Inspector	
	10" OD Hollow Stem Auger/6" OD Roller Bit		Dennis Webster

Method of Well Development

Acker	Hybrid Drill Rig/CM	I Air Rotary Rig			Ear	1 Dye
Size And Type of Bit 10" O	D Hollow Stem Aug	er/6" OD Roller B	it	Inspector	Dennis We	ebster
Method of Installation The borehole was advabedrock. A 6 inch rolle installed. The well conborehole to 305 feet by	anced with 10 inch outside er bit/air hammer was ther sisted of 15 feet of 0.020-	e diameter hollow stem n used advancing the b inch slot PVC well scre then placed from 299 to	augers to to orehole thro	ugh bedrock to 325 2.5 feet of PVC riser.	rock. A 8 inch steel casing was then insta feet bgs. A 4-inch PVC monitoring well w A filter pack of No. 3 sand was placed in ession cap was set ontop of the riser. A 8	as then the
Method of Well Developme Well was developed or casing rises 2.38 feet a	n 6/16/04 by surging the	well with air from drill ri	g. A total of	300 gallons was pu	shed out of the well over 1 hour. The top	of outter
Type of Casing Steel/PVC	Diameter 8-in	ch/4-inch	Type of Ba	ackfill Material and		
Type of Screen PVC	Diameter 4-in		Bento			
Borehole Diameter	10"/	6"		Iter Material 5 Filpro Sand		
Top of Casing	Elevation 1,425.12'	Depth 2' ags		Well Details	Soil Classification	Dept (ft)
Top of Seal Top of Filter	Elevation 1,124.12' Elevation 1,118.12'	Depth 299' bgs Depth 305' bgs		4" PVC Riser	Topsoil USCS Low Plasticity Silty Clay USCS Poorly-graded Sand with Silt Sandstone	
Top of Screen	Elevation 1,113.12'	Depth 310' bgs				50
Bottom of Filter	Elevation 1,098.12'	Depth 325' bgs				- - 75 -
Bottom of Well	Elevation 1,098.12'	Depth 325' bgs				100
Screen Length	15.0'	Slot Size 0.02-inch			Siltstone	125
GROL	JNDWATER ELEVAT (Measured from the Top of Cas	TIONS (ft)		Grout	Claystone Sandstone	150
Elevation 1344.42'	DTW 80.7'	Date 6/15/2004			Siltstone Sandstone	175
Elevation 1340.02'	DTW 85.1'	Date 6/16/2004				200
Elevation	DTW	Date			Siltstone Coal	225
Elevation	DTW	Date			Sandstone Siltstone	250
Elevation	DTW	Date			Claystone Siltstone	275
	DTW	Date		■ Bentonite Seal	Limestone	300



Well No. MW69E

Well Permit No. N/A

		VVCII I CITIIL INO. IN/F
Project	Project No.	
Beazer/INDSPEC Properties		2568412
Location	Elevation And Datum	
Petrolia, Pennsylvania		1422.12 NAVD 1988
Drilling Agency	Date Started	Date Finished
Pennsylvania Drilling Company	5/25/2004	6/10/2004
Drilling Equipment	Driller	-
Acker Hybrid Drill Rig/CMI Air Rotary Rig		Earl Dye
Size And Type of Bit	Inspector	
10" OD Hollow Stem Auger/2" OD NX Core/6" OD Roller I	₿it Dennis '	Webster/Jason Hanna

Method of Installation

Method of Well Development

10 0	DD Hollow Stem Aug	er/2 OD NX Core	ו עט אי	Koller Bil	Dennis Webster/Jason Ha	anna
bedrock. A 2" inch N PVC monitoring well filter pack of No. 3 sa	X Core was advanced dete was then installed. The well	ermining lithology and the ll consisted of 15 feet of 15 ole to 360 feet bgs. A	en a 6 inch f 0.020-inc pentonite s	n roller bit/air hammer h slot PVC well scree eal was then placed f	rock. A 8 inch steel casing was then installed was advanced down to 380.5 feet bgs. A set at 365.5 feet bgs and 368 feet of PV from 353 to 360 feet bgs. A locking comprision	A 4-inch C riser. A
Method of Well Developm	ent					
	on 6/10/04 by surging the value of the stage. The top of outter cas	well with air from drill rig sing rises 2.68 feet ags.	j. Over 30	0 gallons was pushed	d out of the well over 1 hour. The top of ou	ıtter
Type of Casing						
Type of Casing	Diameter		1	Backfill Material		
J Steel/PVC		ch/4-inch	Port			
Type of Screen PVC	Diameter 4-ind		1	Seal Material Conite		
Borehole Diameter	4-1110	611	1	ilter Material		
Boreriole Diameter	10"/	6"		3 Filpro Sand		
Top of Casing	Elevation	Depth	1	<u> </u>		Depth
	1,424.12'	2' ags		Well Details	Soil Classification	(ft)
Top of Seal	Elevation 1,069.12'	Depth 353' bgs		a	Topsoil	E
Top of Filter	Elevation	Depth			Low Plasticity Silty Clay Poorly Graded Sand with Silt	25
	1,062.12'	360' bgs		4" PVC Riser	Sandstone	E
Top of Screen	Elevation	Depth				<u> </u>
	1,056.62'	365.5' bgs			Coal	75
Bottom of Filter	Elevation	Depth			Claystone Sandstone	- 100
Bottom of Well	1,041.62'	380.5' bgs			Caridstone	100
Screen Length	1,041.62'	Depth 380.5' bgs		>	Siltstone	125
Screen Length	.,0	Slot Size				150
	15.0'	0.02-inch			Claystone Sandstone	130
GRO	OUNDWATER ELEVAT	IONS (ft)		Grout	Siltstone	175
	(Measured from the Top of Cas	ing) `´			Sandstone Coal	200
Lievation	DTW 173'	Date 6/10/2004			Sandstone	Ē
1251.12' Elevation 1253.12' Elevation 1259.12'	DTW	Date	+	A	Siltstone	225
1253.12'	171'	6/11/2004			Coal Siltstone	250
Elevation	DTW	Date		/	Sandstone Siltstone	Ė
1259.12'	165'	6/14/2004			Claystone Siltstone	<u> </u>
	DTW	Date			Limestone	300
Elevation	DTW	B-1-		*		- - - 325
Elevation	DTW	Date			Shale	325
1				4	Coal	350
Elevation Elevation	DTW	Date		■Bentonite Seal	Claystone @ 347.5, then Sandstone @	



Well No. MW70D

Well Permit No. N/A

			VVCII I CITTILI INO. IN/
Project		Project No.	
	Beazer/INDSPEC Properties		2568412
Location		Elevation And Datum	
	Petrolia, Pennsylvania		1317.5 NAVD 1988
Drilling Agency		Date Started	Date Finished
	Pennsylvania Drilling Company	6/23/2004	6/25/2004
Drilling Equipme	nt	Driller	
_	Acker Hybrid Drill Rig/CMI Air Rotary Rig		Earl Dye
Size And Type of	f Bit	Inspector	
Size And Type of	10" OD Hollow Stem Auger/6" OD Roller Bit		Dennis Webster

Method of Installation

Method of Well Development

Ž	10 0	D Hollow Stem Aug	el/6 OD Rollel B	IL		Dennis v	vebster
CONSTRUCTION_SUMMARYTemplate TEMPLA	Method of Installation The borehole was adv. bedrock. A 6 inch rolle installed. The well con sand was placed in the the riser. A 8 inch stee	er bit/air hammer was then sisted of 15 feet of 0.020-i e borehole to 181 feet bgs. I cover with locking cap wa	used advancing the b nch slot PVC well scre A bentonite seal was	orehole the en set at then plac	rough bedrock to 215 212 feet bgs and insta ed from 175 to 181 fee	rock. A 8 inch steel casing was then ins feet bgs. A 4-inch PVC monitoring wel lled 199.5 feet of PVC riser. A filter pa et bgs. A locking compression cap was	l was then ack of No. 3
LANGAN WELL CONS	was purged over 1 hou	n 7/16/04 by pumping with ur 30 minutes. The top of	n a submersible pump outter casing rises 3.6	6 feet ags		urged water became clear. A total of 25	60 gallons
AN	Type of Casing	Diameter		1	Backfill Material		
- <u>6</u> 0	Steel/PVC		ch/4-inch		tland		
Report: Lo	Type of Screen PVC	Diameter 4-in d		Ber	Seal Material ntonite		
PM ::	Borehole Diameter	10"/	6"		Filter Material 3 Filpro Sand		
9 3:59:11	Top of Casing	Elevation 1,320.50'	Depth 3' ags		Well Details	Soil Classification	Depth (ft)
11/2/200	Top of Seal	Elevation 1,142.50'	Depth 175' bgs		8" Steel Casing	Topsoil USCS Low Plasticity Silty Clay	- - -
.GPJ	Top of Filter	Elevation 1,136.50'	Depth 181' bgs			Sandstone	25
G LOGS.GP.	Top of Screen	Elevation 1,120.50'	Depth 197' bgs				-
C BORING	Bottom of Filter	Elevation 1,105.50'	Depth 212' bgs		4" PVC Riser	Claystone Sandstone	50
SVINDSPE	Bottom of Well	Elevation 1,100.17'	Depth 215' bgs			Siltstone	- - - 75
FOG	Screen Length	15.0'	Slot Size 0.02-inch		-Grout	Sandstone	- - -
DATA/GINT		JNDWATER ELEVAT (Measured from the Top of Casi	ng)			Coal Siltstone	— 100 - -
Ж	Elevation 1268.50'	DTW 52'	Date 6/25/2004			Sandstone	
IILLY/OF	Elevation	DTW	Date			Coal	
FROM PHILLY/OFFIC	Elevation	DTW	Date			Sandstone	150
	Elevation	DTW	Date		Bentonite Seal	Coal Claystone	- - - 175
2568401	Elevation	DTW	Date		· · · · · · · · · · · · · · · · · · ·	Shale	-
Q:\DATA4\2568401\DATA	Elevation	DTW	Date		No. 3 Sand 4" PVC Screen	Limestone @ 197, then Shale @ 214 ft	200



Well No. MW70E

Well Permit No. N/A

			VVCII I CITIIL IVO. IV/
Project		Project No.	
	Beazer/INDSPEC Properties		2568412
Location		Elevation And Datum	
	Petrolia, Pennsylvania		1315.31 NAVD 1988
Drilling Agency		Date Started	Date Finished
	Pennsylvania Drilling	6/10/2004	6/24/2004
Drilling Equipmer		Driller	•
<u> </u>	Acker Hybrid Drill Rig/CMI Air Rotary Rig		Earl Dye
Size And Type of	Bit	Inspector	
Size And Type of	10" OD Hollow Stem Auger/2" OD NX Core/6" OD Roller	Bit Denni	s Webster/Jason Hanna

Method of Installation

Method of Well Development

Method of Installation The borehole was added bedrock. A 2" inch N. PVC monitoring well of filter pack of No. 3 saicap was set ontop of	X Core was advanced dete was then installed. The we nd was placed in the boreh the riser. A 8 inch steel cov	e diameter hollow stem ermining lithology and t Il consisted of 15 feet o ole to 246 feet bgs. A rer with locking cap wa	augers to to nen a 6 inch of 0.020-inch bentonite so s then place	op of weathered bedr roller bit/air hammer a slot PVC well scree eal was then placed f d ontop of the well.	rock. A 8 inch steel casing was then ins was advanced down to 269 feet bgs. n set at 267 feet bgs and 270 feet of P from 242 to 246 feet bgs. A locking con	stalled to A 4-inch VC riser. A mpression
was purged over 1 ho Type of Casing Steel/PVC	our. The top of outter casin	g rises 1.84 feet ags.		ackfill Material	rged water became clear. A total of 22	.o galloris
Type of Screen	Diameter		1	eal Material		
PVC	4-in	ch	Bent			
Borehole Diameter	10"/	6"		ilter Material 3 Filpro Sand		
Top of Casing	Elevation 1,318.31'	Depth 3' ags		Well Details	Soil Classification	Depth (ft)
Top of Seal	Elevation 1,073.31'	Depth 242' bgs			Topsoil USCS Low Plasticity Silty Clay	-
Top of Filter	Elevation 1,069.31'	Depth 246' bgs			USCS Low Plasticity Silty Clay USCS Low Plasticity Silty Clay Sandstone	_ 25
Top of Screen	Elevation 1,063.31'	Depth 252' bgs		4" PVC Riser	Claystone	50
Bottom of Filter	Elevation 1,048.31'	Depth 267' bgs			Sandstone Siltstone	
Bottom of Well	Elevation 1,046.31'	Depth 269' bgs			Sandstone	- - - 100
Screen Length	15.0'	Slot Size 0.02-inch		 Grout	Siltstone Claystone	<u> </u>
	UNDWATER ELEVAT (Measured from the Top of Cas	ing) `´		Sidut	Sandstone	— 125 - -
Elevation 1170.61'	DTW 147.7'	Date 6/24/2004			Sandstone Coal	150
Elevation	DTW	Date			Sandstone Coal Claystone Claystone	_ 175
Elevation	DTW	Date			Shale Shale	200
Elevation	DTW	Date			Limestone Shale	- - - 225
Elevation	DTW	Date		 Bentonite Seal 	Coal Claystone Sandstone	- - - -
Elevation	DTW	Date		No.3 Sand		— 250 - -



Well No. SW-1

Well Permit No. N/A

		770111 0111111110.1177
Project	Project No.	
Beazer/INDSPEC Properties		2568412
Location	Elevation And Datum	
Petrolia, Pennsylvania		NAVD 1988
Drilling Agency	Date Started	Date Finished
Pennsylvania Drilling	7/20/2004	7/20/2004
Drilling Equipment	Driller	•
Acker Hybrid Drill Rig		Earl Dye
Size And Type of Bit	Inspector	
NA		Dennis Webster
Method of Installation	•	

Method of Well Development

Acke	er Hybrid Drill Rig		Earl Dye			
Take and Type of bil				Inspector	D	/ - l 4
NA NA					Dennis W	/ebster
15 feet of 0.020-inch	slot PVC well screen set	at 184.5 feet bgs and 18	6.5 feet of PVC rise	er. A filter pack of	g well was then installed. The well f No. 3 sand was placed in the bore ntop of the riser. A 8 inch steel cov	ehole to 180
Method of Well Developm Well was developed was purged over 1 horizontal Type of Casing			at 5.0 gallons per n	ninute until purgec	d water became clear. A total of 30	0 gallons
Type of Casing Steel/PVC	Diamet 8-i	_{er} nch/4-inch	Type of Backfill M Portland	aterial		
Type of Screen PVC	Diamet 4-i	er nch	Type of Seal Mate Bentonite			
Borehole Diameter	10	"/6"	Type of Filter Mate No. 3 Filpre			
Top of Casing	Elevation	Depth 2' ags	We We	II Details	Soil Classification	Depth (ft)
Top of Seal	Elevation	Depth 178' bgs	8" Si	teel Casing		10
Top of Filter	Elevation	Depth 180' bgs	4" P'	VC Riser		
Top of Screen	Elevation	Depth 184.5' bgs				
Bottom of Filter	Elevation	Depth 199.5' bgs				
Bottom of Well	Elevation	Depth 199.5' bgs				
O Corecti Length	15.0'	Slot Size 0.02-inch				
<u> </u>	OUNDWATER ELEVA (Measured from the Top of Ca	asing)	-Grou	и		
Elevation	DTW 22.7'	Date 7/20/2004				
Elevation	DTW	Date				
Elevation	DTW	Date				
Elevation	DTW	Date				
Elevation Elevation Elevation	DTW	Date	Bent	onite		178 180
Elevation	DTW	Date		3 Sand VC Screen		
ــــــار						199.5

Soil Gas Logs and SOPs

	ARCADIS	Sub-slab/Soil-Gas Sample Collection Log		
		Sample ID:	54-7/0407 2013/	
Client:	INDSPEC	Boring Equipment:		
Project:	Indesper	Sealant:	cleus	
Location:	. '	Tubing Information:	teflor I mad	
Project#:	AY000315.0001	Miscellaneous Equipment:	SKC Rup, PID,	
Samplers:	1 gw	Subcontractor:	NOW	
		Equipment:	See SUP	
Sampling Depth:	directly belowship	Moisture Content of Sampling Zone:	dy	
Time and Date of Installation:	69 1115 au 107/13	Approximate Purge Volume:	-750me	

Date	Time	Canister Vacuum (a) (inches of Hg)	Temperature (°F)	Relative Humidity (%)	Air Speed (mph)	Barometric Pressure (inches of Hg)	PID (ppm)
47/13	1438	-30	72.3	74	2	2952	6.1

02

SUMMA® Canister Information:

Size (circle one):	(1L) 6L
Canister ID:	4839
Flow Controller ID:	3960.
Notes:	

Tracer Test Information (if applicable):

Initial Helium Shroud:	93%	
Final Helium Shroud:	82%	
Tracer Test Passed:	(Yes) No	•
Notes: Co	an redler bu	

General Observations/Notes:

pra	be show	thur.	1427.	Dassed	Stud	m	text	Field	OID TOO	recharge.
Maria	he sten	red du	e to con	termine to	ed Sr	C	کنید	11.00		1 cm ball
0		-			-	-				

Approximating One-Well Volume (for purging):

⁽a) Record canister information at a minimum at the beginning and end of sampling

(ADCADIC		Sub-slab/Soil-Gas Sample			
	ARCADIS		Collection Log		
			SV-5106072013/		
Client	INDSPEC	Boring Equipment:	hammerdrill		
Project:	Inclaspec	Sealant:			
Location:	,	Tubing Information:	testin-lied		
Project #:	A400315-0221	Miscellaneous Equipment:	ICV / m o Mil lack Necl		
Samplers:	AW	Subcontractor:	pone		
		Equipment:	Sce 80P		
Sampling Depth:	directly blue sub	Moisture Content of Sampling Zone:	dns		
Time and Date of Installation:	0800 6171B	Approximate Purge Volume:	~ 70mc		

Date	Time	Canister Vacuum (a) (inches of Hg)	Temperature (°F)	Relative Humidity (%)	Air Speed (mph)	Barometric Pressure (inches of Hg)	PID (ppm)
0 7/13	1900	-29	74.3	604	5	28.50	12
	1227	-5					

02 (40) K7

SUMMA® Canister Information:

Size (circle one):	(1L) 6L
Canister ID:	3722
Flow Controller ID:	3295
Notes:	

Tracer Test Information (if applicable):

Initial Helium Shroud:	95.4%	
Final Helium Shroud:	8806	
Tracer Test Passed:	(Yes) No	
Notes: CO	on He in tedlers	QG,

General Observations/Notes:

arre strut	1154	Pagged glud- in test.	
1 8			

Approximating One-Well Volume (for purging):

⁽a) Record canister information at a minimum at the beginning and end of sampling

	ARCADIS		lab/Soil-Gas Sample Collection Log
		Sample ID:	DUP-1
Client:	INDSPEC	Boring Equipment:	hammerdrill
Project:	Indespee	Sealant:	Clary
Location:	Rednotice, PA	Tubing Information:	testan-lined
Project#:	A4000318.000	Miscellaneous Equipment:	SKC pup, PD, He detector
Samplers:	w	Subcontractor:	Mono
		Equipment:	See SUD
Sampling Depth:	directly below stab	Moisture Content of Sampling Zone:	dry
Time and Date of Installation:	0830 06/07/2013	Approximate Purge Volume:	n 750me

Date	Time	Canister Vacuum (a) (inches of Hg)	Temperature (°F)	Relative Humldity (%)	Air Speed (mph)	Barometric Pressure (inches of Hg)	PID (ppm)
(017 1B)	1204	-30	74,3	60.4		BX 50	12
	1933	75				2011	1,,,

02 (%) 14.7

SUMMA® Canister Information:

Size (circle one):	0	6 L
Canister ID:	4668	
Flow Controller ID:	3376	
Notes:		

Tracer Test Information (if applicable):

Initial Helium Shroud:	95.490
Final Helium Shroud:	87%
Tracer Test Passed:	No No
Notes: 00	pen He in tecleur bary

General Observations/Notes:

Drau	Strict 11511.	Dussed	Wet in	test.	
8.		1 - 0		J'	

Approximating One-Well Volume (for purging):

⁽a) Record canister information at a minimum at the beginning and end of sampling

ARCADIS		Sub-slab/Soil-Gas Sample Collection Log		
		Sample ID:	I see a live and	1
Client:	INDSPEC	Boring Equipment:		1
Project:	Indespec	Sealant:		1
Location:	Detrolia, PA	Tubing Information:		
Project #:	A4000315.0001	Miscellaneous Equipment:		Pr
Samplers:	AW	Subcontractor:	None	
		Equipment:	See SOP	
Sampling Depth:	directly below Slab	Moisture Content of Sampling Zone:	dux	
Time and Date of Installation:	0900 6/7/13	Approximate Purge Volume:	~ 700 ml	

Date	Time	Canister Vacuum (a) (inches of Hg)	Temperature (°F)	Relative Humidity (%)	Air Speed (mph)	Barometric Pressure (inches of Hg)	PID (ppm)
G/7/B	1344	-30	C6.2	75.5	2	28 5(0	32
	1402	-5				1-0.19	
	190 9						-

SUMMA® Canister Information:

Size (circle one):	11)	6 L
Canister ID:	4844	
Flow Controller ID:	3951	
Notes:		

Tracer Test Information (if applicable):

Initial Helium Shroud:	90.5%
Final Helium Shroud:	8406
Tracer Test Passed:	· es No
Notes: O	you He in specilor being.

General Observations/Notes:

Start pureye	1332	pussed shut in text.	
, ,			

Approximating One-Well Volume (for purging):

⁽a) Record canister information at a minimum at the beginning and end of sampling

AMBIENT AIR

		96 31 77 9977	
9	ARCADIS		lab Soil Vapor Collection Log
2 6 5 6		Sample ID:	AA-2/86072013
Client:	INDSPEC	Boring Equipment:	NA .
Project:		Sealant:	NA
Location:		Tubing Information:	NA
Project #:		Miscellaneous Equipment:	NA
Samplers:	K. KLINE	Subcontractor:	
		Equipment:	SUMMA CANIFORM
Sampling Depth:	NA	Moisture Content of Sampling Zone):	NA
Time and Date of Installation:	NA	Approximate Purge Volume:	
Instrument Po	- Jt		

Instrument Readings:

Date	Time	Canister Vacuum (a) (inches of Hg)	Temperature (°F)	Relative Humidity (%)	Air Speed (mph)	Barometric Pressure (inches of Hg)	PID (ppb)
6-7-13	0815	-29	600		1	29.5	0.0
(a) Record ca		- 9 tion at a minimum	68° at the beginning an	d end of sampling	3	29.5	0.0

SUMMA Canister Information:

Tracer Test Information (if applicable):

Size (circle one):		(6L)	Initial Helium Shroud:	N/
Canister ID:	5694		Final Helium Shroud:	
Flow Controller ID:	2832		Tracer Test Passed:	Yes No
Notes:			Notes:	

General Observations/Notes:

SAMPLE CANISTEN	LOLATED	OUT SIDE	OF.	ADMINISTA A 700 N
BUILDING				

Approximating One-Well Volume (for purging):

When using 1%-inch "Dummy Point" and a 6-inch sampling interval, the sampling space will have a volume of approximately 150 mL. Each foot of %-inch tubing will have a volume of approximately 10 mL.

	ARCADIS		lab/Soil-Gas Sample Collection Log
		Sample ID:	HA-1/05302013/
Client:	INDSPEC	Boring Equipment:	NA
Project:		Sealant:	NA
Location:	Petrolia, PA	Tubing Information:	NA
Project#:		Miscellaneous Equipment:	NA Kostral
Samplers:	ofu	Subcontractor:	Hove
		Equipment:	NA
Sampling Depthe	23.51	Moisture Content of Sampling Zone:	NA
Time and Date of Installation:	NA	Approximate Purge Volume:	M

Date	Time	Canister Vacuum (a) (inches of Hg)	Temperature (°F)	Relative Humidity (%)	Air Speed (mph)	Barometric Pressure (inches of Hg)	PID (ppm)
5/30113	745	-25	(08.5	69	0.0	2892	0.0
	1354	-4	93.7	453	0.0	29.91	0.0

⁽a) Record canister information at a minimum at the beginning and end of sampling

SUMMA® Canister Information:

Size (circle one):	1L (6L)
Canister ID:	5900
Flow Controller ID:	5204
Notes:	

Tracer Test Information (if applicable):

Initial Helium Shroud:			
Final Helium Shroud:	NA		
Tracer Test Passed:	Yes	No	
Notes:	/		

General Observations/Notes:

Prosed Sout - n tol	Steven nitrola	rear don &	Adam Zlda.
MOOR COM- MAD box		7	Mary Strait.

Approximating One-Well Volume (for purging):

	ARCADIS		lab/Soil-Gas Sample Collection Log
		Sample ID:	SV-03/05302013/
Client:	INDSPEC	Boring Equipment:	1 3
Project:		Sealant:	dey
Location:	DC. IOCIAC IN	Tubing Information:	tefler-linear
Project #:		Miscellaneous Equipment:	
Samplers:	\$ APW	Subcontractor:	Nou
		Equipment:	See sop
Sampling Depth:	Lingthy blew stats	Moisture Content of Sampling Zone:	dny
Time and Date of Installation:	5130/13 11m	Approximate Purge Volume:	~750ml

Date	Time	Canister Vacuum (a) (inches of Hg)	Temperature (°F)	Relative Humidity (%)	Air Speed (mph)	Barometric Pressure (inches of Hg)	PID (ppm)
513013	1138	-26	86.6	55.5	4.5	28,93	0.5
	1143	-5					

(42)

SUMMA® Canister Information:

Size (circle one):	(1L) 6L
Canister ID:	4482
Flow Controller ID:	4438
Notes:	

Tracer Test Information (if applicable):

Initial Helium Shroud:	100 -	%
Final Helium Shroud:		
Tracer Test Passed:	Yes	No
Notes:	< 1010 He on tealor bo	ici

General Observations/Notes:

Perry Stourt	1127	
- 0		

Approximating One-Well Volume (for purging):

⁽a) Record canister information at a minimum at the beginning and end of sampling

	ARCADIS		lab/Soil-Gas Sample Collection Log
	/	Sample ID:	51-26/05302013
Client:	INDSPEC	Boring Equipment:	
Project:		Sealant:	Clary
Location:	Petota, PA	Tubing Information:	1111
Project#:	AY00318.0001	Miscellaneous Equipment:	
Samplers:	atu	Subcontractor:	Win
		Equipment:	See SUP
Sampling Depth:	directly below slub	Moisture Content of Sampling Zone:	duz
Time and Date of Installation:	5/30/13 1030	Approximate Purge Volume:	~780ml

Date	Time	Canister Vacuum (a) (inches of Hg)	Temperature (°F)	Relative Humidity (%)	Air Speed (mph)	Barometric Pressure (inches of Hg)	PID (ppm)
5/30/13	1101	-26.5	882	85.8	17	28.94	62
	1100	-5				28.11	0

⁽a) Record canister information at a minimum at the beginning and end of sampling

SUMMA® Canister Information:

Size (circle one):	(1L) 6L
Canister ID:	3590
Flow Controller ID:	4618
Notes:	

Tracer Test Information (if applicable):

Initial Helium Shroud:	0 101
Final Helium Shroud:	
Tracer Test Passed:	(res No
Notes:	opposite in technicology

General Observations/Notes:

Pury Stud	1050.	Α.Α	
	Kin with	Sample ofto	
		5/30/13	

Approximating One-Well Volume (for purging):

ARCADIS		1	slab/Soil-Gas Sample Collection Log	
			SV-08/05 3013 0530 2013/	
Client:	INDSPEC	Boring Equipment:		
Project:		Sealant:	Clay	
Location:	TO THE CITY IN THE	Tubing Information:	kflun-lmech	
Project #:	A4000318,0001	Miscellaneous Equipment:	PID, Kostral, Hedat, SKI pup	
Samplers:	ofw	Subcontractor:	ANN	
		Equipment:	See Sop	
Sampling Depth:	directly below Slab	Moisture Content of Sampling Zone:	dny	
Time and Date of Installation:	5/30/13 900	Approximate Purge Volume:	1000ml 750ml	

Date	Time	Canister Vacuum (a) (inches of Hg)	Temperature (°F)	Relative Humidity (%)	Air Speed (mph)	Barometric Pressure (inches of Hg)	PID (ppm)
5/30113	1025	-27.5	84.9	58,1	0. +	28.94	6.1
	1029	-5				1201120	
	1024	-					-

22 (°66) 18.80

SUMMA® Canister Information:

Sìze (círcle one):	(1L) 6L
Canister ID:	4634
Flow Controller ID:	4692
Notes:	

Tracer Test Information (if applicable):

Initial Helium Shroud:	99%
Final Helium Shroud:	78.6%
Tracer Test Passed:	Yes No
Notes: 🥽	. 2010 He in tedlour hay

General Observations/Notes:

Purge sturt	1015.	

Approximating One-Well Volume (for purging):

⁽a) Record canister information at a minimum at the beginning and end of sampling

Date: April 23, 2012 Page 1 of 4

1.0 PURPOSE AND SCOPE

The purpose of this document is to define the standard operating procedure (SOP) for collecting temporary soil gas samples at the Site. The sample locations and frequency of collection are specified in the text of the Soil Gas Sampling Work Scope Memorandum.

2.0 EQUIPMENT LIST

- Personal protective equipment (PPE) (as required in Site Health and Safety Plan (HASP))
- AMS Gas Vapor Probe (GVP) Kit (1-inch, 7/8-inch, 5/16-inch, and 3/8-inch bits, slide hammer, extension rods, and rod removal jack);
- Rotary hammer drill;
- Flashlight;
- Shop vac or broom and dust pan;
- Natural clay or similar containing no VOCs;
- Paper towels;
- Putty knife, or similar;
- Tape measure;
- Helium;
- Vacuum pump;
- Teflon tubing;
- Silicone tubina;
- Summa Canisters with flow controller (sized appropriately for sampling needs);
- Miscellaneous fittings to connect tubing to sampling union and Summa Canister;
- Crescent wrench, screw driver;
- Extension cord;
- Ground fault current interrupter (GFCI);
- Generator, if no power is available;
- Timer/watch;
- Oil/water interface probe;
- Water:
- Concrete or asphalt patch;
- Bentonite pellets;
- Decontamination supplies; and
- Field logbook and field sheets.

Attachment A Date: April 19, 2012
Title: Soil Gas Sampling Page 2 of 4

3.0 PROCEDURES FOR SOIL GAS SAMPLING

3.1 Installation

- 1. Complete Health and Safety Pre-Planning meeting with plant personnel and sampling team.
- Utility Clearance: Perform work within allowable PA One Call work window, review site utility drawings, clear locations with plant personnel, and if required perform hand clearing activities using triangulation method. Triangulation method involves manually advancing three bore holes in a triangular pattern around the proposed sample location to clear for subsurface utilities.
- Document the proposed sample location in the field notebook along with other appropriate information collected during sampling activities. Verify that no known or suspected utility conduits interfere with the sampling location.
- 4. Identify the proposed sample location with the onsite representative and obtain approval to proceed at that location. Final proposed locations to be cleared by INDSPEC personnel before any intrusive work.
- 5. Obtain appropriate work permit from INDSPEC personnel.
- 6. Don PPE (as required by HASP).
- 7. Using the oil/water interface probe, gauge nearby wells to determine depth to water in the vicinity of the proposed sample location.
- 8. Utilizing the rotary hammer drill, drill a 7/8-inch to 1-inch hole through the asphalt/pavement.
- 9. Connect the Teflon tubing and GVP probe tip to the extension rods.
- 10. Utilizing the rotary hammer drill or slide hammer (if electric power is not available), advance the probe tip to the desired depth.
- 11. Once the soil gas sampler has been installed to the prescribed depth, pull up on the installed rod a minimum of 2-inches to open the GVP probe tip.
- 12. To prevent potential for "short circuiting," the annular space between the rods and ground surface will be sealed with natural clay or similar containing no VOCs (see section 3.2 below).

3.2 Leak Check and Probe Purging (Helium Detection Method)

- 1. Place shroud (container/dome that encapsulates the sample probe to allow for the helium leak check) over the sampling point pulling the Teflon tubing through the hole in the top of the shroud.
- 2. Once the shroud and sampling tubing are in place seal with natural clay (or similar) to ground surface.
- 3. Attach the other end of the sample tube to the vacuum pump.
- 4. Attach silicone tubing to the regulator on the helium tank and the other end to the enclosure. Attach an exhaust tube (silicone tubing) to the enclosure, seal with natural clay (or similar) and position the other end as far away as possible to avoid detection by the helium leak detector (downwind if possible).

Attachment A
Title: Soil Gas Sampling

5. Open the helium tank and fill the enclosure with helium. Make sure the helium detector is not reading any helium before starting the purge.

Date: April 19, 2012

Page 3 of 4

- 6. Obtain a measurement of helium concentration within the shroud using the exhaust tube.
- 7. Place the helium detector on the exhaust line from the vacuum pump.
- 8. Turn on the vacuum pump and purge three borehole volumes at a rate no greater than 200 ml/min. During the purge observe the helium detector for indication of probe leakage. If a reading of >5% of the concentration within the shroud is observed, then the probe leak check has failed, and corrective action is required. Corrective action activities may include: recheck seals, check tubing connections, ensure helium tank is not leaking, and application of more clay. If leak test continues to fail, retract the probe and advance another hole.
- 9. At the end of the purge time turn the pump off, close the soil gas probe and purge valves, and close helium tank valve. If at any time the helium detector read >5% of the concentration within the shroud, then the seals must be checked, repaired and the purge and helium leak check must be conducted again, until the sample location has passed the leak check.

3.3 Sampling

- 1. Remove the canister valve cap, attach the vacuum gauge and flow controller to the canister. The Summa Canister has been evacuated to near absolute zero, so care should be taken to prevent the inadvertent loss of canister vacuum.
- 2. Disconnect the sample tube from the vacuum pump and connect to the flow controller on the Summa Canister.
- 3. Open the valve on the flow controller to begin sample collection. Record the flow controller number, sample canister number, temperature, time, barometric pressure, and vacuum pressure. The pressure in the canister should be between 25 and 30 inches of mercury. If it is not than the canister has leaked and should not be used for sampling.
- 4. When collecting a duplicate soil gas sample connect the two Summa Canisters to the same borehole with one valve and "T" fitting.
- 5. Periodically check the sample to ensure proper operation and that no moisture is entering the Summa Canister and no blockages have halted sample collection.
- 6. Stop sample collection at the proscribed time and prior to the vacuum gauge reaching 0 inches of mercury. Ideally the sample should be stopped with between 7 and 4 inches of mercury remaining on the vacuum gauge.

 Record the temperature, time, barometric pressure, and vacuum pressure.
- 7. Record the sampling date, time, canister ID, flow controller ID, and any other pertinent observations on the field log.
- 8. Fill out the appropriate sample documentation (chain of custody, sample tracking form, etc).
- 9. Disconnect the sample tubing from the probe and remove the sampling union.

Attachment A
Title: Soil Gas Sampling

3.4 Probe Abandonment

- 1. Using a rod jack, remove and disconnect the entire probe assembly.
- 2. Fill the open hole with bentonite pellets to two-inches below original ground surface.

Date: April 19, 2012

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- 3. Finish each sampling point to original grade with concrete or asphalt patch to match the surrounding surface
- 4. Decontaminate AMS GVP sampling equipment.
- 5. Collect GPS coordinates of the sampling locations.

4.0 DOCUMENTATION

Documentation of observations and data acquired in the field will provide information on the proper acquisition of samples and also provide a permanent record. These observations and data will be recorded with permanent ink in a bound weatherproof field log book with consecutively numbered pages. Documentation will remain in the project files following completion of the project.

Notes will be recorded daily when in the field. The information in the field book will include the following as a minimum:

- Project name and number;
- Date(s) to start and finish sampling;
- Field Geologist/Engineer's name;
- Field Geologist/Engineer's observations;
- Start/finish time of each sample location (installation, purge, and sample times);
- Record of all leak checks, pressure gauge readings, and other pertinent information;
- Type of sampling equipment used;
- Sample IDs and sample times for each sample collected;
- Decontamination procedures followed; and
- Weather conditions.

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